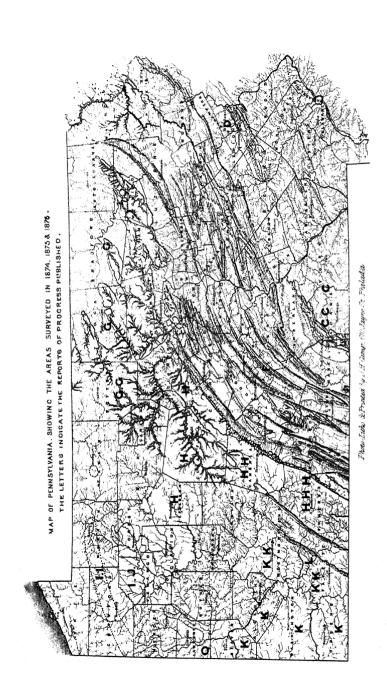
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SECOND GEOLOGICAL SURVEY OF PENNSYLVANIA: 1876-77.

REPORT OF PROGRESS.
I.I.

OIL WELL RECORDS AND LEVELS.

BY

JOHN F. CARLL.

PUBLISHED IN ADVANCE

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REPORT OF PROGRESS LLL.

HARRISBURG:
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1877.

Entered, for the Commonwealth of Pennsylvania, in the year 1877, according to acts of Congress,

By JOHN B. PEARSE,

Secretary of the Board of Commissioners of Geological Survey.

In the Office of the Librarian of Congress, at

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PREFACE TO I.I.

The volume of Oil Well Records now published as prepared by Mr. John F. Carll, assistant in charge of the survey of the Oil Region of Pennsylvania, is unique of its kind, and will doubtless be considered an important contribution to geology,—not only the geology of Pennsylvania, but of the world.

For the first time geologists are now put in possession of a large collection of authentic, well considered and classified mass of facts, made up with great pains and carefulness, in the face of many difficulties, with the help of oil well owners and operators, not only during the progress of the survey, which commenced in 1874; but during ten years of a previous residence in Venango county.

To Geologists of other States and countries this collection of facts will be peculiarly acceptable, as it will furnish them with precise and abundant information by which to comprehend and pass judgment upon the statements of American geologists, often vague and always generalised regarding the age, habitation and relative abundance and quality of that remarkable light fuel in which the entire civilized world is now commercially interested.

To oil men at home it will be equally valuable and acceptable—first, as giving them on a larger scale and spread over a wider area, the information which each one possesses accurately enough already, but only in a partial and local manner, and second, as providing them with what may be called the first edition of an Oil Well Gazetteer.

To owners and operators in the Oil Region the Geological Survey of Pennsylvania has this to say for the book which it now publishes for their benefit:—Judge it, gentlemen, by your own experience. Think, what have been your own difficulties in

vi 1.1. PREFACE.

obtaining such information. Think, also, what this book might have been if you and your predecessors had combined from the beginning of the history of oil well boring to arrange and enforce a bureau of oil well records. Instead of the more or less doubtful record of 2,000 wells which this book presents to you, you might have had a still more trustworthy and better arranged list of 20,000 wells.

Such thoughts always come too late to redress an error. The past is hopelessly lost. But the future is still our own. This book, if it were to have no other worth, would be invaluable as a lesson of what may be done. No good reason can be assigned why from now on, in coming years, oil well records should not be collected, arranged and recorded for the benefit of each and all.

This volume is published as preliminary to Mr. Carll's second Report of Progress. His first Report of Progress was marked I. This volume is marked, according to the system of publication adopted by the Board of Commissioners of the Survey, I.I. It is, however, only the basis upon which Mr. Carll is writing his second report, which will soon be published with the mark, I.I.I.

The facts which are here given in a separate volume, partly with the design of preventing the second report from swelling to too great a size, partly because it will be in demand by those who care very little for any detailed report, and partly in order that references to the *printed pages* and *running numbers* of this volume may be made by Mr. Carll in the text of his report—the facts thus published separately and in advance will be explained, criticised and combined in that report, so that the geology of the Oil Regions may be better understood.

It is not unsafe to say that the geology of the Oil Region is now practically in its main features established. But questions still remain unanswered; and the obstacles which stand in the way of giving perfectly satisfactory answers to some of these questions seem almost insuperable. We know, however, that nothing in science is hopeless. We live always on the verge of discovery. The merest accidental circumstance sometimes pours a flood of light upon the darkest geological territory. We should not, however, wait on such contingencies. Patient

PREFACE. I.I. vii

and intelligent investigation is always at our command, and on this alone true science relies.

The survey of North-western Pennsylvania is far from being completed. We cannot rest satisfied until we have demonstrated the relationships of all the rocks bored through in the wells with all the outcrops in the belt of country north of the oil field, from Olean to Sharon, and from Franklin to Erie. We should also have a perfect connection of sections between Titusville and Warren, between Warren and Bradford, between Bradford and Ridgeway. We must make it still plainer how the red rocks of the wells connect themselves with the red rocks of Driftwood and the Allegheny Mountain base, and with the red rocks of Potter and Tioga counties and the Catskill Mountains. We must connect more conclusively the mountain sands of the Allegheny river with the Vespertine (or Pocono) sandstones in the gaps of the Chestnut Ridge and Laurel Hill at Blairsville, Johnstown and Connellsville. And in the opposite direction, westward, we cannot consider the survey finished while a shadow of doubt remains on the exact detailed identification of the Oil and Mountain sands with the Sub-carboniferous and Waverly sandstones and conglomerates of Ohio.

In all these directions the Geological Survey is pushing its field work this year, and some of the most important of the above mentioned questions will probably be nearly, if not quite, settled by the work which different field parties are vigorously prosecuting in Warren, M'Kean, Forest, Elk, Indiana and Lawrence counties.

But there are other and more important, because more practical, questions still which can only be answered within the limits of the Oil Region itself and by the help of such oil well records as are published in this volume—questions relating chiefly to the extent of the oil bearing sands sideways and downwards. To these questions Mr. Carll has given his steadfast and close attention. His views will be published in his forthcoming report. I have neither the right nor the wish to anticipate them; nor would it suit the purpose of this book; but I have a right to say here that I concur with his results, although to the correctness of some of them I have been converted only by the abundance and strength of his facts and ar

viii I.I. PREFACE.

guments, and in spite of old and deeply grounded prejudices in favor of other views. I believe that intelligent observers in the oil regions will come in time to place entire reliance on the soundness of Mr. Carll's opinions, and will repay him for his long, laborious and anxious investigation with that honor which true science is sure in the end to win.

J. P. LESLEY.

1008 CLINTON STEBET, PHILADELPHIA, July 21, 1877.

Norm.—By an accidental shifting of the numerous documents received from Mr. Carll after the wells had all been numbered consecutively, it was discovered, but too late in the composition of the volume for the error to be rectified, that numbers 140 to 281 had been passed over. For this error I alone am responsible.

J. P. L.

TABLE OF CONTENTS, I.I.

CHAPTER I.

The first systematic collection and discussion of	۳۸۵۸۱	•da	PAGE.
of Venango county oil wells, made in 18			
1869 by Mr. E. S. Nettleton, C. E.,	OO Z	uu	7
	-	-	1
Group 1. In the borough of Pleasantville,	-	-	9
Group 2. In the vicinity of Pleasantville,	-	-	20
Group 3. At Shamburg and vicinity,	-	•	34
Group 4. Along Oil Creek valley,	-	-	4 3
Group 5. Along the Allegheny river from C	il Ci	t y	
to West Hickory,	•	•	61
Group 6. At Enterprise, in Warren county,	-	-	64
Group 7. At Church Run, Crawford county,	-	-	66
Group 8. Miscellaneous localities,	-	-	69
CHAPTER II.			
Extra list of E. S. Nettleton's oil well levels of	186	18	
1869, without accompanying records of the		•	
passed through in boring. (Arranged as I			73
passed through in boring. (Arranged as t	MIOL	е.)	19
CHAPTER III.			
Extra list of J. F. Carll's Venango county of	il w	ell	
levels, along lines run in 1874,	-	_	78
Line A. From Pleasantville to Church Run,	-	-	78
Line B. From Pleasantville to Tionesta,	-	_	79
Line C. From Pleasantville to Tidioute,		_	81
Line D. From Pleasantville to Rouseville,		-	84
·		1	-
CHAPTER IV.			
First selection from J. F. Carll's Warren and Ve	enan	go	
oil well records got in 1876,	-	-	87
Group 1. Colorado district,	-		88
·	[ix	I.I.]	
		-	

Group 2. Enterprise, Warren	1 cou	nty,	-	-	-	113
Group 3. Dennis Run,	•	-	-	-	-	114
Group 4. Triumph, Warren	count	у,	•	-	-	116
Group 5. Dennis Run, -	-	-	-	-	-	118
Group 6. Dennis Run,	-	•	-	-	-	119
Group 7. Tidioute, -	-	•	-	-	-	120
Group 8. Oil Creek, Columb	ia far	m,	-	-	-	121
СНАР	TER	٧.				
Records at Pithole City and vici	nity,	Corn	plante	er tow	n-	
ship, Venango county,	-		• .	-	_	130
Group 1. M'Kinney farm,	-	•	-	-	-	130
Group 2. Morey farm,	-		-	•	-	136
Group 3. Holmden farm,	•	•	-	•	•	139
Group 4. Rooker farm,	-	-	-	-	-	141
Group 5. Ball farm,	-	* 879	~~ ?~	-	-	142
Group 6. Hyner; Babbitt;	Reyr	olds,	-	-	-	143
Group 7. Dawson farm,		-	-	-	-	145
Group 8. Minor farm,	-	~	-	-	~	146
Group 9. Keep; Tyrrel; &c	٥.,	-	~	•	-	149
Group 10. Miscellaneous,	-	•	-	•	•	151
Group 11. West Hickory	-	-	-		-	154
Group 12. Great Republic,	-	-	•	-	-	160
CHAPT	ER	VI.				
Records obtained along Oil cree	ek,	-	-	-		165
Group 1. Caldwell farm,	_			-	•	165
CHAPT	ER '	VII.				
Records obtained at Titusvill	le P	ine (hure	h ar	ď	
Church run,	-	-	•	•	-	168
CHAPT	er v	ZIII.				
Records obtained at Cashup,	-	-	-	-	•	173
CHAPT	ER	IX.				
Records obtained at Tidioute;	Triu	mph;	Fag	undu	3;	
New London, &c.,	-	_ ′	-	-	•	177
Group 1. Economy wells,	-		-	-	-	177
Group 2. Triumph wells,	-	-		-	•	180
± ,						

(CONTENT	rs.				I.I. xı
Group 3. Fagundus wells Group 4. Clapp farm, - Group 5. Miscellaneous,	•	- -	<u>-</u> -	- -	- -	182 183 184
CH.	APTEI	R X.				
Records from the vicinity of	of Pleas	santvi	lle, T	'itusv	ille	
and Rouseville,	-	-	-	-	•	187
CHA	APTER	XI.				
Records of wells in Warren	and (Crawfo	rd C	os.,	-	193
CHA	PTER	XII.				
Records at Sugar Creek; 1	Raymil	ton; I	rank	lin, a	and	
Cochran,	-	-	-	•	•	200
CHA	PTER	XIII.				
Records at Horse Creek; S	State R	un; S	alina	; Sale	em,	22.1
and Rockland,	•	-	~	-	-	204
	PTER					
Records at Reno; Milton; Scrubgrass,	Foster's -	; Mou	nt H	ope, a	ind -	208
CHA	PTER	xv.				
Records at Bullion Run and	Clinto	nville,	-	-	•	219
CHA	PTER	XVI.	ı			
Records at Emlenton, -	- ,	-	-		-	222
CHA	PTER	XVII	•			
Records in Clarion county,	-	-	_	-	-	226
CHAR	TER :	XVII	[.			
Records between Foxburg	and Pet	rolia,	-	-	-	237
CHA	PTER	XIX.				
Records at Greece; Modoc;	; M'Cat	fferty,	-	-	-	247
CHA	PTER	XX.				
Records at Criswell; Monte	erey; E	Brady's	Ben	d,	•	253

CONTENTS.

CHAPTER XXI.

The state of the s	
Records between Petrolia and St. Joe,	260
CHAPTER XXII.	
Records south of St. Joe,	265
CHAPTER XXIII.	
Miscellaneous well records,	272
CHAPTER XXIV.	
Special careful records of six wells measured by Mr.	
J. H. Carll, near Petrolia,	283
CHAPTER XXV.	
Oil well elevations in Clarion, Armstrong and Butler	
counties,	296
Group 1. Near Parker,	298
Group 2. At Stonehouse,	299
Group 3. Martinsburg; Campbell; Argyle, -	299
Group 4. Petrolia and Karn's City,	300
Group 5. Petrolia and Fairview,	301
Group 6. Modoc and Greece City,	301
Group 7. East of Petrolia,	303
Group 8. Karn's City and Millerstown,	303
Group 9. Millerstown to St Joe,	305
Group 10. St. Joe and Carbon Centre,	306
Group 11. Jeffersonville and Herman Station,	307
Group 12. Foxburg, St. Petersburg, Turkey City,	307
Group 13. Turkey City and Dogtown,	308
Group 14. Dogtown, Pickwick and Triangle,	308
Group 15. Pickwick and Edenburg,	309
Group 16. Bullion Run,	310
CHAPTER XXVI.	
On the results of surveys in 1876, 1877 made for the	
purpose of rectifying the system of railroad and	
oil well levels throughout north-west Pennsyl-	
vania,	311
A. Pittsburg to Lake Erie,	318
B. Pittsburg to Lake Erie,	320

CONTENTS.	I.I. xiii
C. Oil City to Lake Erie, D. Oil City to Ashtabula, O., E. Pittsburg to Stoneboro', O., F. Atlantic and Great Western levels, G. East end of Phil. & Erie railroad,	321 323 324 325 327
CHAPTER XXVII.	
Comparison of levels run by John H. Carll in February, 1877, with the Allegheny Valley RR. levels,	329
Elevations above ocean of a number of datum points which have been used by engineers in north-west-	
ern Pennsylvania,	334
Lake elevations above ocean, Accepted elevations above ocean of some of the	335
points mentioned in this discussion,	335
CHAPTER XXVIII.	
Index and general corrections for the tables of rail road elevations in and about the Oil Region of	
Pennsylvania,	337
1. Allegheny Valley railroad,	339
2. West Penn railroad,	340
3. Butler Branch of the West Penn RR.,	342
4. Low Grade Division of A. V. RR.,	343
5. Parker & Karn's City railroad,	344
6. Oil Creek & Allegheny Valley railroad,	345
7. Union & Titusville railroad,	347
8. Philadelphia & Erie railroad,	347
9. Atlantic & Great Western railroad.	350
Mahoning division, A. & G. W. RR.,	351
10. Franklin branch of A. & G. W. RR.,	352
11. Lake Shore and Michigan Southern RR.,	352
12. Franklin branch of L. S. & M. S. RR.,	353
13. Erie & Pittsburg railroad,	354
14. New Castle and Franklin RR.,	355
15. New Castle and Beaver Valley RR.,	356
16. Pittsburg, Fort Wayne and Chicago RR.,	357

•	The The	
xiv	1 1	CONTENTS.
-A.1 V		00111111110

17. Buffalo, New York and Philadelphia RR.,	-	358
18. New York and Erie railroad,	-	359
Elevation of a number of points on the Titusvil	le	
and Pithole and plank road, Venango county,	-	36 0
General index to the volume.	•	363

A COLLECTION

OF

OIL WELL RECORDS.

1874-1877.

BY J. F. CARLL.

CHAPTER I.

The First Systematic Collection and Discussion of Records of Venango County Oil Wells, made in 1868 and 1869, by Mr. E. S. Nettleton, C. E.*

In the fall of 1868 the first systematic attempt was made to ascertain the direction and dip of the Oil Sands of the Venango region and the true relation which the oil producing rock of one district bears to that of another.

This was during the great Pleasantville oil excitement, when, probably for the first time, the attention of a large class of operators was called to the fact that there was a marked difference between the oil and oil sand of the Pleasantville and surrounding districts and the oil and oil sand of Oil creek.

Previous to that time very few levels had been taken, and those only locally from well to well on the same farm, or within the bounds of one producing centre; but some of the detached districts had been fortuitously connected by lines of levels run for pipe lines from station to station, and by preliminary railway surveys which crossed the country in almost every direc-

^{*} Published separately in the proceedings of the American Philosophical Society, January 19, 1877, Philadelphia.

tion. From these sources it was ascertained that the Pleasantville oil rock, although called the 4th sand, lay at a higher elevation than the 3d sand of Oil creek.

Some operators held the opinion that the oil rocks spread horizontally under the whole country, and that by drilling deeper at Pleasantville the Oil creek 3d sand would be found, and a much larger supply of oil obtained. Others contended that the rocks dipped towards Oil creek, and the Pleasantville wells had already reached the Oil creek sand. They went still further and, pointing to the old failures in the Pleasantville district, averred that there was no oil in the rock when these wells were put down, but that the flooding of the oil sands under the valley of Oil creek, by the abandonment years before of so many wells, had forced the oil from its original home there to these higher portions of the rock.

Discussions on these points showed the necessity for more information on the subject; and while some chose to gain this information on their own account by sinking wells deeper at considerable expense to see what might be below, a few believed that something could be learned by a careful study of the wells already drilled, in connection with a series of surface levels extending over a large area, embracing in one system all the main oil producing centres.

As an outgrowth of this idea an informal meeting was held and a committee appointed to plan and carry out the work necessary to be done. Mr. E. S. Nettleton, then residing in Pleasantville, consented to act as one of the committee, and to undertake the task of running the lines of levels and collecting the well records. A circular was issued to well owners, and blanks were prepared for filling in the well records, of which the following are copies:

Circular A.

Pleasantville, Pa......1868.

DEAR SIR:—A pressing need has long been felt by the more thoughtful operators in the Pennsylvania oil regions for a more thorough and accurate knowledge of the thickness, dip and general characteristics of the oil bearing rock in this section. The drillings in different localities have established data suffi-

cient for operations in those particular places, but no effort has been made to connect these together in one comprehensive whole, and very little is known as yet of the relative positions of the oil-bearing rocks in these several localities. In order that this want may be supplied a fund has been raised, a committee appointed to supervise the work, and the services of a competent engineer secured. It is proposed to make an accurate topographical survey of Pleasantville, Enterprise, Bean Farm, Pithole, Shamburg, Bull Run and Pioneer oil districts, and then by a comparison of the records of a large number of the most prominent wells in said districts, to prepare and publish a report, which we think will contain facts and figures of great value to those engaged in the development of oil territory. In furtherance of this object the enclosed series of questions have been prepared, which we hope you will be so kind to fill out and return to us, and any further information you may be able to give will be duly acknowledged.

Signed S. Q. Brown, George K. Anderson, J. H. Herbert, John F. Carll, E. S. Nettleton, committee.

Address all letters to E. S. Nettleton, civil engineer, box 45, Pleasantville, Pa.

Circular B.

Pleasantville, Pa1868.

DEAR SIR:—Please fill out the following blank and mail to E. S. Nettleton, civil engineer, box 45, Pleasantville Pa.:

Record of	Well No
Located on	Farm.
Lease No tested	186
Distance from surface to top of First or "Mountain" Sand,	No. of feet
Thickness of the First Sand	"
Distance from surface to top of Second Sand,	"
Thickness of Second Sand	"
Distance from surface to top of Third Sand	"
Thickness of Third Sand	"
Distance from surface to top of Fourth Sand	"
Thickness of Fourth Sand.	
Distance from surface to top of Fifth Sand	"
Thickness of Fifth Sand	66
Distance from surface to Sixth Sand	"
Thickness of Sixth Sand	"
What is the entire depth of your well?	"
At what depth were the mud veins?	"
At what depth is the seed bag?	"

How far is the bottom of working chamber from the bottom of the well?	No. of feet
Is your well cased?	
Quality of the oil-bearing rock, pebble or sand?	
What color of oil is produced?	*****
Gravity of oil?	*****
What has been your best production per day?	bbls.
How many engines would the best flow of gas run?	
What is the engineer's number of this well as marked on	
the Samson post?	
Remarks	
2 4000 00 17	

During the winter of 1868-69, the work was prosecuted with considerable interest and diligence; but like all other matters not directly personal, it soon began to be neglected by the committeemen, who were all deeply engaged in their own affairs, and Mr. Nettleton was left to work out the problem as best he could almost alone.

Meantime the field widened. New developments at Scrubgrass and Parker's Landing led off to the south, far beyond the limits proposed for our work. Mr. Nettleton had been attracted to the west, and connected himself with the Engineering Corps of Greeley Colony, which made it necessary for him to close up his affairs in the Oil Regions preparatory to his removal. No one had any personal interest in continuing the investigation, and the work stopped just when it should have been carried forward, leaving the materials in hand in such an unfinished and incomplete condition that no report could be made which would be at all satisfactory to those who had subscribed to the funds of the survey.

This was in the spring of 1870. Mr. Nettleton, before leaving Pleasantville, placed all the accumulated papers of the survey in my hands, where they have remained to the present time. They were accompanied by the following brief report to the Committee, dated Pleasantville, April 1, 1870, and addressed to the Committee of the Topographical Survey:

Gentlemen:—I herewith present to you the facts and papers relating to the survey which I commenced over one year since.

Levels have been carried to nearly all the important producing centres of the upper district; but I have not been able to connect Parker's Landing with the survey in consequence of its distance from my nearest "bench" at Venango City. I expected to have obtained the elevations along the Allegheny Valley Railway from its Chief Engineer, but have been disappointed.

Many difficulties have been encountered in getting information from well owners on whom I am entirely dependent for the data so essential to this work. Some are not willing and prompt in assisting in this way because they are under the impression that it is a private enterprise; but the most serious obstacle met with is the characteristic indifference of the people in the oil business to anything but that which promises an immediate personal benefit.

By means of the levels taken to the well mouths I have adjusted the records of one hundred and thirty-four wells in such a way that they all may be compared with one point. This point is the Ennis Well, Pleasantville, which is located on the highest ground in the county. All the other wells are therefore below this base. The elevation of this point above tide I at first determined from information furnished me by the Smithsonian Institution to be 1,761.81 feet. This result was arrived at by correcting my own levels with the levels of the Allegheny Valley Railway as I received them. But upon checking my line with other Railway Surveys, I find an error of about fifty-three feet, which I have traced to the Allegheny Valley Railway between Venango City and Pittsburg. This makes my base 1,709 feet above tide instead of 1,762, as first announced.*

In the arrangement of the strata of sandstone I have paid but little attention to the usual method of numbering, which, from the way of counting from the top is very liable to confuse; for in some places two or three mountain sands are found, and in others the first sand is the oil producing rock. I have discarded some records which were evidently incorrect, and have been forced to use some which are not altogether to be relied upon.

I have noted the elevation of 308 wells and about 80 permanent benches in different localities. I also give you the elevation above sea of several places in the western part of the state.

^{*}The true elevation of this point as recently established by the Geological Survey is 1726' (seventeen hundred and twenty-six feet) above ocean.

There have been sent out 153 blanks which have not been returned.

I have great confidence in this method of locating and defining the oil-bearing rocks, and from the data which I hand you very much can be gathered which is of practical use.

In the early part of my observations on this Survey I formed the opinion that the oil rocks dipped uniformly in one direction; but more extended surveys show differently. In some places the line of greatest dip is nearly south, while in others it is more westerly. The line of oil deposit lies almost invariably in the line of greatest dip, showing doubtless that the formation was made in swift running water, and the deposit of pebbles was in the line of the current. Hence, the "belts," which correspond with the dip.*

If, in your opinion, this survey is of any practical benefit, I would suggest that it be put into the hands of the Producers' Association, with a view of making it to the interest of a larger number to assist in collecting the necessary data.

Much more work is yet required to define and locate the oilbearing rocks in this section of the State; but the difficulties above mentioned, and the lack of co-operation, together with demands on my own time which make it impossible for me to give it the attention required, have induced me to make this report and place in your hands to use as you may deem best all the facts and figures thus far collected.

No part of the result has been made public except a small sketch furnished to Dr. J. S. Newberry, of the Ohio State Geological Survey.

All of which is respectfully submitted.

E. S. Nettleton, C. E,

Since my connection with the Second Geological Survey of Pennsylvania I have found these papers of great service and been obliged to refer to them often for facts which could not now be otherwise obtained, but I did-not feel at liberty to use the materials in any public way without Mr. Nettleton's consent and the acquiescence of the State Geologist. These re-

^{*}This early generalization by Mr. Nettleton cannot now be widely applied. [Ed.]

strictions are now removed by Mr. Nettleton's permission to publish whatever may be of general interest.

The well records are many of them imperfect; none of them indeed are just what the geologist requires, for they give no indication of the character of the strata between the sandstones. The blanks were not prepared with a view of studying the lithology further than it was involved in an examination of the oil rocks. But they accomplished the purpose intended, and brought out the facts required to demonstrate that there are different beds of sandstone lying at different horizons and all dipping with considerable uniformity to the southwest.

This may be shown in a general way by taking a few wells at random along the line surveyed from Pleasantville to Oil City, thus: (refer to the records)

(1) Ennis Well, Pleasantville, top of oil sand above ocean					
(87)	National, No. 2, 11 miles south-west of	Pleasa	ntville	785	44
(127)	Fink, No. 12, Shamburg	1	(730	"
(231)	Porter, Foster Farm, Oil Creek			684	"
	G. K. Anderson, No. 134, Pet. Centre,			637	"
(258)	Lady Suffolk, Blood Farm	3d «		594	"
-(261)	Well No. 23, Rynd Farm	ou d		574	"
(268)	Champion, No. 2, Rouseville	Sand.		563	4.6
	Elizabeth, Clapp Farm			55I	"
(270)	Siveily & Gardner, Allegheny Run		l	528	"

Between the National well and Fink, No. 12, there is a drop of about 45 feet in the figures here given from the black oil rock or Stray, to the green oil rock or Third sand of Oil Creek, which accounts for what appears to be a greater dip according to the distance than on other parts of the line. The Green oil rock is found under the Pleasantville district in its proper horizon, as is shown by some of the well records, but is unproductive. Between the National and Shamburg both rocks yield oil in some wells. To make the whole series of ocean elevations above given uniform—that is, all referring to the top of the third sand—the elevation at the National should be about 740 feet and at Ennis' about 768 feet.

^{*}All the figures in the final columns of the first publication in the Proc. A. P. S. have been raised 6 feet (807+6=813, &c.) since May 1, 1877, when the datum/level above ocean of Oil City Union Depot RR. grade was finally fixed, by the Surveys of 1876-1877, at 1,008'.

Without doubt the general reader will be much confused in attempting to trace the oil sands in their proper order through the mass of records here given. No effort has been made to harmonize the apparent discrepancies made by drillers in numbering sand rocks. The records have been copied from the originals just as they were received, only making them to conform to the general plan adopted in the publication of the whole mass of records, good, bad and indifferent, which we have on hand. It will be a work for future study to select those which are reliable, and to arrange and classify them in an intelligible manner. We hope that the publication of these records as they are given to us by men who claim to understand the order and arrangement of the oil rocks will satisfy them that they are not working understandingly, and show them the necessity of a closer examination of the measuresdrilled through, and of a more careful numbering and measurement of the sand rocks.

Mr. Nettleton's levels, as mentioned in his report, were all based on his Ennis Hill datum. In 1874 we established the height of this hill by levels connecting with the railways at Tidioute, Tionesta and Rouseville as 1,713 feet above tide.* We now add13 feet to reduce this to ocean level,† making it 1,726 feet above the ocean. The elevations of the following wells have all been adjusted to this standard.

All the wells not otherwise noted are located in Venango-county, Pennsylvania.

Some of the records here given from Enterprise and the Columbia farm, on Oil creek, have been published in a previous issue.‡ It will be noted that these differ from the former quite materially—a circumstance which shows how unreliable, for close study, the best of records are, even when obtained from the well owners and superintendents themselves.

To make sure always that the well record sent in should be the particular one required, Mr. Nettleton adopted the plan of numbering the wells in his field book as he leveled to them.

^{*}At Schuylkill bridge, Philadelphia, Pennsylvania railroad datum.

[†]In Raritan Bay, Coast Survey datum. [Note.—In the first publication, these elevations were provisionally given at 1713' and 1720'.—Ep.]

Proc. Am. Phil. Soc. Dec., 1876.

He also carried with him a paint-pot and brush and marked the same number used in his note-book plainly on the samson-post. This is the "engineer's number" referred to in the blanks. When the well owner returned the record he gave, in addition to the name of the well, the number on the samson-post, and thus there could be no mistake made in adjusting the levels to the records. These numbers are given in the following pages at the end of the name of the well, in brackets, thus: Ennis Well (1), Harmonial Well No. 1 (53), &c., &c.

GROUP I.

Wells in the Borough of Pleasantville and adjoining its east line.

1. Ennis Well. (1) October, 14, 1868.

On lease No. 3, Guild & Wright tract, adjoining east line of borough of Pleasantville. Authority, J. L. Ennis.

Well mouth above ocean (high tide) in feet					1726
? (Interval unknown)	446	to	446	=	1280
1st SS. (First Sandrock)	56	"	502	=	1224
?	168	"	670	=	1056
2d SS	40	66	710	=	1016
7	99	66	809	=	917
3d SS	30	44	839	=	887 *
?	74	"	913	=	813
4th SS	22	66	935	=	791

Wet hole. Cased at 446'. Pumped 4 feet from the bottom. Best production, 200 barrels per day. Gas sufficient to fire 6 boilers. Black oil; gravity, 43°.

2. Swan and Belch Well, No. 1. (57) January 26, 1869.

S. M. Dunham farm, lease No. 5, Canfield tract, adjoining east line of borough of Pleasantville, Authority, Edwin Swan.

Well mouth above ocean in feet				• • •	1684
?	180	to	180	=	150 4
1st SS					1489
9	422	66	617	=	1067
2d SS	24	"	641	=	1043
?	79	"	720	==	964
Stray SS	25	"	745	==	939

1					924
3d SS	28	"	788	=	896
7	72	"	860	==	824
4th SS pebble and rock,					815
? pocket,	231	"	8921	=	7911

Wet hole. Cased at 407'. Pumped 12 feet from bottom. Best production, 130 barrels per day. Gas sufficient to fire 3 boilers. Black oil. Mud veins at 775' and 862'.

3. Bonta and Hawes Well, No. 5. (60) December, 1868.

Lease No. 4, Geroe farm, adjoining east line of borough of Pleasantville. Authority, Charles P. Byron.

Well mouth above ocean in feet					1654
? (Interval unknown)	215	to	215	=	1489
1st SS. (First Sandstone)					1427
?	205	"	432	=	1222
2d SS	22	"	454	=	1200
?	203	"	657	=	997
3d SS	50	"	707	=	947
?	135	"	842	=	812
4th SS pebble,	16	"	858	=	796
? pocket,	2	"	860	==	794

Wet hole. Cased at 280'. Pumped 1\frac{2}{3} feet from bottom. Best production, 120 barrels per day. Gas sufficient to fire 3 boilers. Black oil. Mud veins at 666' and 852'.

4. M'Grew and Ritchie Well. (5) February, 1869.

Jack farm, M'Grew, Ritchie & Co.'s tract, adjoining northeast corner of borough of Pleasantville. Authority, James B. M'Clune.

Well mouth above ocean in feet					1690
?	135	to	135	=	1555
1st SS	85	"	220	=	1470
?	197	"	417	==	1273
2d SS	18	44	435	=	1255
?	194	"	629	==	1061
3d SS	24	"	653	==	1037
?	122	"	775	==	915
4th SS	35	"	810	==	880
?	67	"	877	==	813
5th SS pebble,	11	66	888		802
? pocket,	8	66	896	=>	794
Wet hole. Cased at 425'.					

Black oil.

5. Jack Well. (7) February, 1869.

Jack farm, adjoining the north-east corner of borough of Pleasantville. Authority, George H. Jack.

Well mouth above ocean in feet					1686
? (Interval unknown)					
1st SS. (First Sandstone)	18	"	420	==	1266
7					1036
2d SS	10	"	660	==	1026
•	65	46	725	==	961
3d SS	30	"	7 55	==	931
?	116	"	871	==	815
4th SS	11	"	882	=	804
? pocket.	7	"	889	=	797

Wet hole. Cased at 405'.

Best production, 12 barrels, per day. Gas sufficient to fire one boiler.

6. Rising Sun Well. (8) February, 1869.

Jack Farm, adjoining north-east corner of borough of Pleasantville. Authority, Wm. A. Barnes.

Well mouth above ocean in feet					1682
7	390	to	390	=	1292
1st SS	28	"	4 18	==	1264
•	215	"	633	==	1049
2d SS	20	"	653	=	1029
7	112	"	765	==	917
3d SS	33	"	798	=	884
?	73	"	871	==	811
4th SS	11	"	882	=	800
? pocket,	5	"	887	=	795

Wet hole. Cased at 397'. Black oil.

Best production per day, 10 barrels. Gas sufficient to fire one boiler.

7. Howe Well. (11) March, 1869.

Jack Farm, adjoining north-east corner of borough of Pleasantville. Authority, ———.

Well mouth above ocean in feet	• • • • •				1677
7.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	400	to	400	=	1277
2d SS	30	"	430	=	1247
? including 3d SS	432	46	862	=	815
4th SS	18	46	880	=	797
?pocket,	6	"	886	=	₹791

Wet hole. Cased at 415'.

Best production, 20 barrels per day. Gas sufficient to fire one boiler.

8. Nettleton Well, No. 1. (20) January 17, 1866.

Nettleton tract, formerly Watkins farm, lease No. 2, northeast corner of borough of Pleasantville. Authority, E. S. Nettleton.

Well mouth above ocean in feet		· • · •			1588
? (Interval unknown)	109	to	109	==	1479
1st SS. (First Sandstone)	121	"	230	===	1358
2	72	"	302	==	1286
2d SS	46	46	348	==	1240
?	137	"	485	==	1103
Red Rock.	55	"	540	==	1048
3d SS	17	"	5 57	==	1031
	170	"	727	===	861
4th SS	9	"	736	=	852
?	126	"	862	=	726
5th SS pebble and sand,	18	66	880	=	708
? pocket,	$11\frac{1}{2}$	"	8911		6961
Wet hole. Cased at 180'. Pumped	at 2	221	fron	a bo	ottom.

Best production, 35 barrels per day. Gas sufficient to fire 4 boilers. Black oil. Gravity, 44°. Mud veins at 557′ and 730′. The lowest water course is at 162′. At 716′ a quartz vein was struck. Well was tested thoroughly at 736′ and 560′. At the 736′ test, considerable gas was found.

9. Richey Well, No. 1. (15) December, 1868.

Nettleton Farm, lease 15, borough of Pleasantville. Authority, John Nichols.

Well mouth above ocean level					1657
?					
1st SS	43	+ 6	51	===	1606
2					1276
2d SS	34	"	415	==	1242
					957
3d SS	32	"	732	==	925
?					812
4th SS pebble and sand.	17	66	862	_	705

Wet hole. Cased at 384'. Pumped 5' feet from the bottom.

Best production per day, 35 barrels. Gas sufficient to fire 2 boilers. Dark green oil. Gravity, 43° to 48°.

10. Plumer Well, No. 1. (16) April, 1869.

 Nettleton Farm, borough of Pleasantville. Authority, ——.

 Well mouth above ocean in feet.
 1645

 ? (Interval unknown).
 828 to 828 = 817

 4th SS. (Fourth Sandstone).
 20 " 848 = 797

 ?
 pocket,
 2 " 850 = 795

11. Lippincott Well, No. 1. (18)

February, 1869.

Watkins' Farm, lease, 17, borough of Pleasantville, 50 rods south of Nettleton's well. Authority, ———.

Well mouth above ocean					1625
?	340	to	340	=	1285
2d SS	8	"	348	==	1277
7	232	66	580	=	1045
3d SS	35	"	615	==	1010
?	25	46	640	==	985
4th SS	25	"	665	=	960
?	30	"	695	=	930
5th SS	20	"	715	=	910
	99	"	814	==	811
6th SS	18	"	832	=	793
? pocket,	8	"	840	=	785

Wet hole. Cased at 341'.

Best production, 3 barrels per day. Gas sufficient to fire two boilers. Black oil. Mud vein at 700'.

12. Blakesley Well. (14) November, 1868.

Brown and House farm, situated in the borough of Pleasant-ville. Authority, ———.

Well mouth above ocean in feet 16	78
? 400 to 400 = 12	78
2d SS. estimated	53
? 200 " 625 = 10)53
3d SS. estimated 15 " 640 = 10	38
? 70 " 710 = 5	168
Stray SS 15 " 725 = S)53
? 40 " 765 = 9	13
4th SS 40 " 805 = 8	373
? 56 " 861 = 8	317
5th SS	′98

Wet hole. Cased at 415'.

Best production, 10 barrels per day. Gas sufficient to fire one boiler. Black oil.

13. United States Petroleum Co.'s Well, No. 27. (23) October 9, 1868.

Brown and House tract, borough of Pleasantville. Authority Wm. H. Kerns.

Well mouth above ocean in feet		,			1682
? (Interval unknown)	392	to	392	=	1290
1st SS. (First Sandstone)	23	66	415	=	1267
?	206	66	621	=	1061
2d SS	40	* 4	661	=	1021
	112	"	773	=	809
3d SS	25	66	798	=	884
?	74	46	872	==	810
4th SS sand,	15	"	887	=	795
? pocket,	7	"	894	=	788

Wet hole. Cased at 631'.

Best production, 60 barrels per day. Gas sufficient to firethree boilers. Black oil.

14. Harsh Well, No. 3. (28) October 20, 1868.

Harsh tract, lease No. 3, borough of Pleasantville. Authority, Samuel Harsh.

Well mouth above ocean in feet					1688
?	30	to	30	=	1658
1st SS	40	"	70	==	1618
7	66	"	136	=	1552
2d SS. estimated	20	"	156	===	1532
?	609	"	765	=	923
3d SS. estimated ,	30	"	795	=	893
?	77	"	872	=	816
4th SS pebble and sand,	15	"	887	==	801
? pocket,	71	46	8941	=	793½

Wet hole. Cased at 450'. Pumped 9' from bottom.

Best production, 70 barrels per day. Gas sufficient to fire 23 boilers. Black oil.

Struck a water course at 140' from the surface. A dry crevice struck at 250' from the surface, carried off the water coming in at 140'.

15. Schreiber Well, No. 1. (29) October 28, 1868.

Harsh tract, lease No. 1, borough of Pleasantville. Authority, Albert Insinger, Jr.

Well mouth above ocean in feet					1680
?					
1st SS	45	"	65	=	1615

7	545	to	610	==	1970
2d SS	32	"	642	==	1038
7	103	46	745	==	935
3d SS	30	"	775	==	905
•	97	"	872	=	808
4th SS 4 feet at top pebble; bottom sand,	20	"	892	=	788
? pocket,	1	"	893	==	787

Wet hole. Cased at 615'. Pumped at 3 feet from the bottom.

Best production, 30 barrels per day. Gas sufficient to fire one boiler. Black oil. Mud veins at 760' and 877' from surface.

16. Tidioute Well, No. 1. (30)

October, 1868.

Connely farm, borough of Pleasantville.				Authority,				
Well mouth above ocean in feet	• • • • •				1676			
? (Interval unknown)	410	to	410	==	1266			
1st SS. (First Sandstone)	30	"	440	==	1236			
7	193	"	633	===	1043			
2d SS	20	"	653	=	1023			
7	102	"	755	=	921			
3d SS	30	"	785	=	891			
7	82	66	867	==	809			
ith SS	17	"	884	=	792			

Wet hole. Cased at 428'.

Best production, 135 barrels per day. Gas sufficient to fire 2 boilers.

17. Crocker Well. (31)

October, 1869.

Wet hole. Cased at 412'.

Best production, 26 barrels per day. Gas sufficient to fire 14 boilers. Black oil.

18. Beam Well, No. 1. (37)

June 25, 1868.

On land bought of T. B. Shugart, M. D., in borough of Pleasantville. Authority, Beam Bros.

Well mouth above ocean in feet	1652
? 100 to 100 =	

1st SS	12	to	112	=	1540
	258	"	370	==	1282
2d SS	15	**	385	=	1267
?	212	"	597	==	1055
3d SS	28	46	625	==	1027
?	111	"	736	=	916
4th SS	35	4.5	771	=	881
?	69	"	840	==	812
5th SS yellow; pebble at top and middle,	17	"	857	==	795
? pocket,	1	"	858	=	794

Wet hole. Cased at 609'. Pumped 3½ feet from bottom.

Best production, 68 barrels per day. Gas sufficient to fire 18 boilers. Black oil. Mud veins at 746' and 848'.

The sand rocks were all measured when struck and when through, with the exception of the First or Mountain sand, which was calculated by the length of the tools standing in the derrick and by the rope to the wrapper. Average production to January, 1869—6 months and 5 days—30 barrels per day. Tubing drawn only twice, and only four days stoppage altogether during that period. Production at January 1, 1869, 7 barrels per day.

19. Say Well, No. 6. (42) November 26, 1868.

Zuver farm, borough of Pleasantville. Authority, Williams, Say & Co.

Well mouth above ocean in feet					1638	
? (Interval unknown)	207	to	207	=	1431	
1st SS. (First Sandstone)		46	299	=	1339	
?	141	"	440	==	1198	
2d SS	20	"	460	=	1178	
9	225	"	685	===	953	
3d SS	22	"	707	=	931	
?	106	46	813	===	825	
4th SS	40	"	853		785	
?	65	46	918	=	720	
5th SS pebble,	18	66	936	==	702	

Wet hole. Cased at 362'. Pumped 6 feet from bottom.

Best production, 15 barrels per day. Gas sufficient to fire 2 boilers. Black oil.

20. Say Well, No. 5. (43)

September 29, 1868.

Zuver farm, lease No. 1, borough of Pleasantville. Authority, Williams, Say & Co.

Well mouth above ocean in feet	 	 	1629
7			1519

Ist SS	92	to	202	=	1427
•	141	"	343	==	1286
2d SS	20	"	363	==	1266
	225	"	588	=	1041
3d SS	22	"	610	=	1019
?	114	"	724	=	905
4th SS	60	"	784	=	845
?	36	"	820	=	809
5th SS pebble,	14	"	834	=	795

Wet hole. Cased at 356'. Pumped 5 feet from bottom.

Best production, 90 barrels per day. Gas sufficient to fire 4 boilers. Black oil. Gravity, 49°.

Too many holes drilled in the immediate vicinity for the good health of this well.

21. Say Well, No. 2. (54)

June 15, 1868.

Zuverfarm, lease No. 2, borough of Pleasantville. Authority, Williams, Say & Co.

				1624
100	to	100	=	1524
90	66	190	=	1434
147	"	337	=	1287
20	"	357	=	1267
223	64	580	=	1044
25	"	605	=	1019
115	66	720	=	904
60	"	780	=	844
38	"	818	==	806
17	"	835	=	789
	100 90 147 20 223 25 115 60 38	100 to 90 " 147 " 20 " 223 " 25 " 115 " 60 " 38 "	100 to 100 90 " 190 147 " 337 20 " 557 223 " 580 25 " 605 115 " 720 60 " 780 38 " 818	100 to 100 = 90 " 190 = 147 " 337 = 20 " 357 = 223 " 580 = 25 " 605 = 115 " 720 = 60 " 780 = 38 " 818 = 17 " 835 =

Wet hole. Cased at 355'. Pumped 3' from bottom.

Best production, 80 barrels per day. Gas sufficient to fire 15 boilers. Black oil.

22. Benedict Well. (280)

February, 1869.

On Joseph Benedict's lot, borough of Pleasantville. Authority, C. L. Raver & Co.

Well mouth above ocean in feet					1640
?					
1st SS	15	"	405	` =	1235
7	197	"	602	=	1038
2d SS	25	"	627	=	1013
?	103	66	730	=	910
3d SS	40	66	770	=	870
?	62	"	832	=	808
4th SS	18	"	850	=	790
? pocket,	5	**	855	=	785

Wet hole. Cased at 390'. Gas sufficient to fire one boiler: Best production, 3 barrels per day.

23. Porter and Taylor Well, No. 1. (49)

November 17, 1868.

Wm Porter farm, borough of Pleasantville. Authority, Stephen Hine.

Well mouth above ocean in feet					1623
? (Interval unknown)	350	to	350	=	1273
1st SS. (First Sandstone)	25	**	375	=	1248
?	210	44	585	==	1038
2đ SS	40	44	625	==	998
7	90	44	715	==	908
3d SS	40	61	755	==	868
?	51	66	806	=	817
4th SS fine pebble,	19	"	825	==	798
? pocket,	4 1	"	8291	==	7931
				_	

Wet hole. Cased at 355'. Pumped 6 feet from bottom.

Best production per day, 14 barrels. Gas sufficient to fire one boiler. Black oil.

24. Harmonial Well, No. 1. (53) February 1, 1868.

Wm. Porter farm, borough of Pleasantville. Authority, Norman Potter, agent.

Well mouth above ocean in feet					1620	
	70	to	70	=	1550	
1st SS	12	64	82	==	1538	
7	494	44	576	=	1044	
2d SS	40	44	616	=	1004	
**********************************	91	"	707		913	
3d SS	40	64	747	=	873	
	65	4.6	812	=	808	
4th SS 15' pebble, 3' sand,	18	"	830	=	790	
Slatepocket,	5	"	835	==	785	

Wet hole. Cased at 312'. Pumped 9 feet from bottom.

Best production, 125 barrels per day. Gas sufficient to fire 3 to 4 boilers. Black oil. Gravity, 47°. Mud veins in 2d, 3d and 4th sands.

Well was cased first at 380'; flowed 3 months, averaging 100 barrels per day, but running down, it finally ceased yielding oil in paying quantities November 1, 1868. It was then drilled deeper, showing the following record:

Thickness of measures to bottom of 4th SS	830	to	830	=	790
Slate,	24	"	854	==	766
5th SS	20	"	874	=	746
? pocket,	6	"	880	=	740

The 5th or "green oil sand" was fine, gray and muddy. It furnished a good supply of gas and some green oil, but not insufficient quantity to pay the expenses of pumping the well.

25. Comey and Andrews Well. No. 1. (113) November 9, 1868.

Lease No. 11, west part of Porter farm, now Brown, Byers & Co., borough of Pleasantville. Authority, Gaylord Mattison.

Well mouth above ocean in feet					1587
? (Interval unknown)					1487
1st SS (First Sandstone)	140	66	240	=	1347
?	75	"	315	=	1272
2d SS	25	44	340	=	1247
?	80	"	420	=	1167
3d SS	30	"	450	=	1137
?	230	"	680	=	907
4th SS	20	"	700	=	887
?	95	44	795	=	792
5th SS pebble,	.18	16	813	=	774
? pocket,	7	46	820	==	767
TOTAL 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2				-	

Wet hole. Cased at 320'. Pumped 9' from the bottom.

Best production, 3 barrels per day. Gas sufficient to fire one-half boiler.* Black oil. Gravity, 45°.

26. M'Grew Well, No. 1. (70)

Brown Brothers farm, borough of Pleasantville. Authority, James M'Grew.

Well mouth above ocean in feet					1641	
?	12	to	12	=	1629	
1st SS	26	44	38	==	1603	
?	338	46	376	=	1265	
2d SS	12	"	388	=	1253	
?	208	46	596	=	1045	
3d SS	43	"	639	=	1002	
?	99	"	738	==	903	
4th SS	27	"	765	=	876	
?	70	"	835	=	806	
5th SS	18	"	853	==	788	
? pocket,	2	"	855	=	786	
		_				

Wet hole. Cased at 382'. Black oil. Mud veins in 4th and 5th SS.'s.

The numbers given to the sands are not the proper ones, as the mountain sand should not be counted. We pumped the well at several points in the sand marked 5th SS. as above. I do not recall how many feet of pebble sand there were.

^{*}i. e. Not enough gas to fire one boiler.

27. Harmonial Well, No. 2. (95) July 1, 1868.

Armstrong farm, lease No. 40, three-quarters of a mile nearly south from Pleasantville Corners. Authority, Norman Potter, agent.

O *** ,					
Well mouth above ocean in feet					1647
? (Interval unknown)	36	to	36	==	1611
1st SS. (First Sandstone)	60	46	96	=	1551
1,	294	"	390		1257
2d SS estimated,	20	"	410	=	1237
?	350	"	760	=	887
3d SS	25	66	785	==	862
?	55	66	840	===	807
4th SS sand and pebble,	16	66	856	==	791
? pocket,	14	"	870	==	777

Wet hole. Cased at 395'. Pumped 14 feet from bottom.

Best production, 80 barrels per day. Gas sufficient to fire 2 boilers. Black oil. Gravity, 45°.

The three upper rocks were very much broken up. Production at this date (December 19, 1868,) 10 barrels per day.

GROUP II.

Wells in the vicinity of Pleasantville.

28. Baldwin and Porter Well, No. 1. (238) February, 1869.

On Gates farm, Neilltown road, three-quarters of a mile northeast of the borough of Pleasantville. Authority, James B. M'Clune.

Well mouth above ocean in feet					1622
?	110	to	110	=	1512
1st SS	90	"	200	=	1422
?	140	"	340	=	1282
2d SS	31	"	371	=	1251
?	203	"	574	==	1048
3d SS	21	"	5 95	==	1027
?	117	"	712	=	910
4th SS	36	"	748	=	874
	70	"	818	=	804
5th SS	12	"	830	=	792
7	27	"	857	=	765
6th SS top white pebble, bottom gray sand,	20	"	877		745
? pocket,	10	"	887	===	735

Wet hole. Cased at 353'. Gas sufficient to fire 8 boilers. This well was tested at 840', in the "black oil sand," and afterwards drilled to 887'. The flow of gas came from the lower or "green oil sand." But little oil in either of the sands.

29. Norman Potter Well. (308)

January 1, 1870.

On Aaron Gates' farm, one mile north-east of Pleasantville. Authority?

Well mouth above ocean in feet					1518
? (Interval unknown)	225	to	225	=	1293°
1st SS. (First Sandstone)	20	"	245	==	1273
?	215	"	460	=	1058
2d SS	28	"	488	=	1030
?	112	"	600	=	918
3d SS	22	"	622	=	896
? 703' to 707', pebbly,	109	"	731	=	787
4th SS 5' pebble. 16' gray sand,	21	"	752	=	766
? pocket,	7	"	759	=	759

This well at the present time is pumping about 20 barrels of salt water per day. (Jan. 4, 1870.)

30. Mason Well. (277)

1865 and 1868.

On Prosser farm, about 1½ miles north 80° east of Pleasantville. Authority, Jas. B. McClune.

Well mouth above ocean in feet					1557
?					1467
1st SS	68	"	158	=	1399
2	94	"	252	==	1305
2d SS	18	"	270	==	1287
?	228	"	498	=	1059
3d SS	13	"	511	=	1046
?	69	"	580	=	977
4th SS	20	"	600	=	957
?	30	"	630	=	927
5th SS	28	"	658	==	899
IN TO	134	"	792	=	765
6th SS	10	"	802	==	755
?pocket,	3	"	805	=	752
7		l			

Wet hole. Cased at 260'. Green oil show.

Mud veins at 582' and 634'.

31. Fobes Well. (278)

Dunham farm, $1\frac{1}{2}$ miles east of Pleasantville. Authority, George C. Fobes.

0.00-Bt 0. m 0.00.					
Well mouth above ocean in feet					1527
? (Interval unknown)	85	to	85	=	1442
1st SS. (First Sandstone)	55	66	140	=	1387
	79	"	219	==	1308
2d SS	34	"	253	==	1274
£	284	46	537	=	990
3d SS	31	"	568	=	959
7	35	66	603	=	924
4th SS	28	"	631	==	896
***************************************	86	66	717	=	810
5th SS	2	44	719	==	808
•	15	66	734	==	793
6th SS	11	66	745	==	782
g. 	96	46	841	==	686
Sand, shales and pebbles	24	44	865	==	662
***************************************	11	"	876	=	651
Red rock	57	ţ¢	933	=	594
Slate	107	"	1040	=	487
Red rock	10	"	1050	==	477

Wet hole. Cased at -. Mud veins at 507' and 597'.

This well was tested at 650', and then drilled to its present depth and tested again, with but little show of oil at either point.

32. Steele Well, No. 1. (120)

November, 1868.

Benj. Tyrrell farm, 1½ miles south-east of Pleasantville, near Ledsham well. Authority,——.

Well mouth above ocean in feet	<i></i> .				1572
£ ?					
3d SS	37	"	657	===	915
	115	"	772	==	800
5th SS pebble,	17	"	789	==	783
? pocket,	7	66	796	===	776

Wet hole. Cased at 318'. Pumped 24 feet from bottom. Best production, 8 barrels per day. Black oil.

33. Ledsham Well, No. 1. (121)

November, 1866.

9...... 97 to 97 = 1459

1st SS	18	to	115	=	1441
?	141	"	2 56	=	1300
.2d SS	58	"	314	=	1242
?	170	66	484	=	1072
-3d SS	41	66	525	==	1031
?	58	46	583	==	973
4th SS	73	66	656	=	900
?	74	66	730	=	826
.5th SS brown coarse pebble,		44	743	=	813
?	27	66	770	=	786
6th SS pebble,	20	"	790	=	766
? pocket,	28	"	818	=	738

Wet hole. Cased at 300'. Pumped 15' from bottom.

Best production, 16 barrels per day. Half enough gas to fire 1 boiler. Black oil. Gravity, 44°.

The 4th SS. consists of two layers with a small stratum of slate intervening about the middle (say 10' of slate). The 5th SS. is of uniform texture throughout. The 6th SS. is white, and finer than the 5th SS.

34. Terry Well. (125)

Bean farm, 2² miles south-east of Pleasantville, near Farmers' hotel. Authority, ——.

Well mouth above ocean in feet					1493	
? (Interval unknown)	203	to	203	=	1290	
1st SS. (First Sandstone)	28	44	231	==	1262	
7	196	"	427	=	1066	
.2d SS	26	66	453	=	1040	
?	72	46	525	=	968	
:3d SS	20	"	545	=	948	
?	25	"	570	=	923	
4th SS	18	"	588	=	905	
?	90	66	678	=	815	
5th SS	14	66	692	=	801	ı
? pocket,	1	46	693	=	800	

Wet hole. Black oil.

Wells have been put down deeper in the vicinity of this well which find 27' of slate between the two lower sands, the 5th and 6th.

35. Golden Well, No. 2. (165) February, 1868.

72 to 72 = 1485

1st SS	75	to	147	=	1410 [,]
?	151	44	298	=	1259
2d SS	17	44	315	=	1242
?	131	"	446	==	1111
3d SS	11	"	457	=	1100
?	79	"	536	=	1021
4th SS	19	"	555	=	1002
?	61	"	616	=	941
5th SS	21	"	637	=	920
?	32	"	669	=	888
6th SS	21	"	690	=	867
?	79	"	769	=	788
7th SS pebble and sand,	15	"	784	==	773
? pocket,	1	"	785	=	772

Wet hole. Cased at 300'. Pumped 2' from bottom.

Best production, 7 barrels per day. Half enough gas to fire a boiler. Black oil. Gravity, 47°. Mud veins at 678′ and 777′.

36. North Star Well, No. 2. (163) January 9, 1869.

Lease No. 1, North Star Company's "Clark farm," 1½ miles south of Pleasantville. Authority, T. Chattle.

• ,					
Well mouth above ocean in feet					1617
? (Interval unknown)	153	to	153	=	1464
1st SS. (First Sandstone)	20	16	173	=	1444
?	172	"	345	=	1272
2d SS	25	44	370	=	1247
?	260	"	630	==	987
3d SS	62	"	692	=	925
9	23	"	715	=	902
4th SS	35	"	7 50	==	867
?	65	86	815	=	802
5th SS	12	"	827	-	790

Wet hole. Cased at 347'. Pumped 3' 6" from bottom.

Best production, 35 barrels per day. Gas sufficient to fire 1 boiler. Dark oil. Mud veins at 740' and 822'.

37. Hoozier Well. (287)

At Dawson Centre, Pithole creek, 1½ miles above Pithole City, and 4 miles south of Pleasantville. Authority, Norman R. Bates.

Well mouth above ocean in feet					1363	
7	124	to	124	==	1239	
1st SS	24				1215	

9	209	to	357	=	1006
2d SS	24	"	381	=	982
?	76	"	457	==	906
3d SS	30	"	487	=	876
?	103	"	590	=	773
4th SS	20	**	610	=	753
? pocket,	33	"	643	=	720

Best production, 15 barrels per day. Green oil.

38. Skidmore Well. (293)

April, 1869.

M'Bride farm, "Tip-Top," 2½ miles south of Pleasantville. Authority?

Well mouth above ocean in feet					1628
? (Interval unknown)					
4th SS. (Fourth Sandstone)	25	"	812	=	816
?	63	"	875	=	753
5th SS	22	"	897	==	731
? pocket,	3	"	900	=	728

Wet hole. Cased at 420'.

Best production, 35 barrels per day. Half enough gas to fire a boiler. Black oil.

This well is supposed to be pumping from the same as the 4th rock in Pleasantville, but the oil is of lighter color.

39. Black Well. (292)

Lease No. 25, Winslow Petroleum Co., "Tip-Top," 2½ miles south of Pleasantville. Authority, Mr. Loud, superintendent.

Well mouth above ocean in feet					1536	
<i>7</i> ?	118	to	118	=	1418	
1st SS	65	"	183	==	1353	
?	123	66	306	==	1230	
2d SS	34	4.6	340	=	1196	
?	200	"	540	=	996	
3d SS	16	"	556	=	980	
?	14	44	570	=	966	
4th SS	26	"	596	==	940	
?	37	46	633	=	903	
5th SS	22	"	655	=	881	
?	43	1.6	698	=	838	
6th SS	25	"	723	==	813	
?	67	64	790	=	746	
/th SS pebble,	5	"	795	=	741	
1 20	3	r.c	798	==	738	
sth SS pebble,	6	66	804	=	732	
? pocket,	10	"	814	=	722	

Wet hole.

Best production, 1 barrel per day. Half enough gas to fire a boiler.

40. Olive Well. (182)

1865.

Hebert tract, Mill farm, 21 miles south of Pleasantville. Authority?

Well mouth above ocean in feet					1492
? (Interval unknown)	202	to	202	==	1290
1st SS. (First Sandstone)	38	"	240	=	1252
2	130	"	370	==	1122
2d SS	,5	66	3 75	=	1117
2	155	"	530	=	962
3d SS	10	"	540	=	952
	97	"	637	===	855
4th SS	21	"	658	=	834
2	77	"	735	=	757
5th SS	15	**	750	=	742
7	10	"	760	==	732
6th SS pebble and sand,	12	"	772	=	720
?pocket,	29	46	811	=	691

Wet hole. Not cased. Seed bag at 480'. Black oil. Gravity, 45°.

41. Buffalo Well, No. 1. (181)

December 26, 1868.

Lease A, (10 acres,) Mill farm, 13 miles south of Pleasantville. Authority, Wm. Williams & S. Simpkins.

Well mouth above ocean in feet			• • • • •		1492
?					1432
1st SS	50	66	110	=	1382
?	150	"	260	=	1232
2d SS	25	"	285	=	1207
	240	"	525	==	967
3d SS	15	"	540	=	952
	50	"	590	==	902
4th SS	20	"	610	==	882
?	130	"	740	=	752
5th SS pebble and sand,	16	**	756	=	736

Wet hole. Cased at 535'. Pumped 7' from bottom.

Best production, 4 barrels per day. Half enough gas to fire 1 boiler. Black oil. Gravity, 47°.

This well is supposed to be flooded by several old abandoned wells in the immediate vicinity. Have pumped in 27 days 42 barrels of roily oil, green and black, principally black.

42. Snyder Well, No. 1. (180) December, 1868.

Lease No. 3, Mill farm, 13 miles south of Pleasantville. Authority, J. C. Champion.

Well mouth above ocean in feet					1516
? (Interval unknown)					1466
1st SS. (First Sandstone)	40	66	90	==	1426
7	165	"	255	=	1261
2d SS	25	"	280	=	1236
?	130	"	410	=	1106
3d SS	25	"	435	==	108L
7	70	"	505	=	1011
4th SS	20	"	525	=	991
7	70	"	595	=	921
5th SS	14	"	609	=	907
7	31	"	640	=	876
6th SS	20	"	660	=	856
?	80	"	740	=	776
7th SS	18	" 7	758	=	758
? pocket,	2	"	760	==	756

Wet hole. Cased at 275'. Pumped 8' from bottom.

Best production, 90 barrels per day. Gas sufficient to fire 1 boiler. Black oil. Gravity, 48°. Mud veins in both the lower sands.

43. Bates Well, No. 1. (102)

Dawson farm, 1½ miles south of Pleasantville. Authority, N. R. Bates.

Well mouth above ocean in feet	• • • • • •				1593
?	560	to	560	=	1033
3d SS. estimated	30	"	590	=	1003
?	50	"	640	=	953
4th SS	30	"	670	=	923
?	122	"	792	=	801
5th SS fine pebble and sand,	13	44	805	=	788
? pocket,	15	"	820	=	773

Wet hole. Cased at 400'. Pumped 20' from bottom.

Black oil. Gravity, 47°, when first pumped.

At one time during the first 90 days of the production the well yielded at the rate of 500 barrels per day, and was running at this rate when the men, in the excitement occasioned by so great a flow of oil, "shut down" to connect with a larger tank. This seemed to check the flow so effectually that the well could never be brought up to its former production.

The first part of the record was lost. My driller reported lime and sand for 30' above the 5th SS. Overlying this was a stratum of soapstone more than 20' thick, in which was a crevice or cavity 5' in depth, then 3' of soapstone, then a cavity of 11' in depth, as measured by pole tools.*

44 Bates Petroleum Co. Well, No. 3. (119)

Fall and Winter of 1866.

Matteson farm, Pleasantville and Enterprise road, half a mile north of Pleasantville. Authority, N. R. Bates.

Well mouth above ocean in feet.		<i>.</i> .			1469
? (Interval unknown)			175		
1st SS. (First Sandstone)		0 "	215	=	1254
?		1 "	416	==	1053
2d SS		0 "	456	=	1013
?		5 "	561	=	908
3d SS	_	3 "	594	=	875
?	_	4 "	678	==	791
4th SS int	erior, gray, 1	2 "	690	=	779
?		0 "	700	==	769
5th SS close, sor		0 "	720	==	749
?) "	730	==	739
777 . 7 7 7 . 1001					

Wet hole. Cased at 190'.

Best production, half barrel per day. Gas sufficient to fire half boiler. Green oil.

When this well was first tested, after a few days of pumping, it showed very well, giving considerable gas and throwing at intervals a full pipe of oil. At this time an accident occurred, fastening the working valve so as to necessitate the drawing of the tubing. As the well was not cased at this time it seemed to be injured very much by the letting in of the water, and never again made so good a show as at first.

45. Paschmacker Well. (198)

Near school house on Pleasantville and Enterprise road, 1 mile north of Pleasantville. Authority, M. P. Barber.

Well mouth above ocean in feet					1592
?	306	to	306	==	1286
1st SS	21	"	327	=	1265

^{*}As these well records are here merely placed on record no comment is made on such extraordinary (or rather, ordinary) statements. The literature of oil is full of them. They are mostly based on errors of observation easily explained. [J. P. L.]

?	53	to	380	==	1212
2d SS	26	46	406	==	1186
?	284	"	690	==	902
3d SS	20	"	710	=	882
?	110	"	820	==	772
4th SS	21	66	841	=	751
? pocket,	114	"	955	=	637

Wet hole.

Unproductive. Green oil show. Little gas. Red water.

46. Eaton Well. (289)

April, 1869.

On lease No. 1, J. Y. Siggins farm, 1 mile north-west of Pleasantville. Authority, James Y. Siggins.

Well mouth above ocean in feet					1674
? (Interval unknown)					1534
1st SS. (First Sandstone)	35	"	175	=	1499
7	45	"	220	=	1454
2d SS	50	"	270	=	1404
?	373	66	643	=	1031
3d SS	40	"	683	=	991
?	97	"	780	=	894
4th SS pebble,	20	"	800	===	874
?	121	"	921	==	753
5th SS sand,	12	"	933	=	741
? pocket,	9	"	942	=	732

Wet hole. Cased at 450'. Mud veins at centre of 3d and 4th sands.

Best production, 2 gallons per day. Green oil.

About 10' of the top of the 4th SS. was pebbly and ought to have produced oil, if immediately tested, but the well was drilled to the 5th sand before the tubing was put in. This sand was white and close, with no pebbles.

47. Siggins Well. (291)

November, 1868.

James Y. Siggins farm, 1 mile north-west of Pleasantville. Authority, James Y. Siggins.

Well mouth above ocean in feet					1541
?	95	to	95	=	1446
1st SS	40	"	135	==	1406
?	125	"	260	==	1281
2d SS	37	"	297	=	1244
?					1025
3d SS	42	"	558	=	983

7	103	to	661	=	880
4th SS	15	"	676	=	865
?	104	"	780	=	761
5th SS	19	"	799	=	742
2	81	"	880	=	661

Wet hole.

The 4th SS. was a splendid pebble rock with excellent show of oil. Got the sand pump stuck in drilling and had to drill it out, and this is thought to have spoiled the well.

48. Smythe Well. (118)

1869.

John M'Caslin farm, 1 mile west of Pleasantville. Authority, —.

20,					
Well mouth above ocean in feet					1614
? (Interval unknown)	142	to	142	=	1472
1st SS. (First Sandstone)	66	"	208	=	1406
?	128	"	336	=	1278
2d SS	36	44	372	==	1242
?	208	"	580	=	1034
3d SS	42	44	622	==	992
7	98	"	720	==	894
4th SS	29	66	749	==	865
?	110	66	859	==	755
5th SS gray sand,	19	"	878	=	736
? pocket,	5	64	883	=	731

Wet hole. Cased at 375'.

No paying production. The well was tested at 749', where some black oil was obtained. Afterwards the well was put down to the next (5th) SS., from which it produced very little green oil.

49. Horseshoe Well, No. 1. (117) July, 1866.

On Pithole, Golden and Cherry Run Oil Co.'s tract, 1½ miles south-west of Pleasantville. Authority, John F. Carll.

Well mouth above ocean in feet					1559
?	135	to	135	<u></u>	1424
1st SS	30	"	165	=	1394
?	120	"	285	=_	1274
2d SS	35	66	320	=	1239
?	220	"	540	=	1019
3d SS	28	"	568	==	991
?	106	66	674	=	885
4th SS	27	"	701	=	858
?	104	"	805	==	754
5th SS sand and pebble,	35	"	840	==	719-

Wet hole Cased at 300'. Pumped 10' from bottom.

Best production, a few gallons per day. Green oil. Gas sufficient to fire 2 boilers.

Mud veins at 540', 695', and 765'.

50. Children's Well, No. 1. (97)

November 4, 1868.

Armstrong farm, lease 101, adjoining Brown Bros. tract, $\frac{1}{2}$ mile south of the borough of Pleasantville. Authority,——.

 Well mouth above ocean in feet
 1644

 ? (Interval unknown)
 834 to 834 = 810

 4th SS (Fourth Sandstone,) pebble and sand,
 12 " 846 = 798

 ?
 pocket,

 14 " 860 = 784

Wet hole. Cased at 418'.

Best production, 42 barrels per day. Gas sufficient to fire 3 boilers. Black oil.

51. Brown and Warner Well. (110)

March, 1868.

Armstrong farm, lease No. 89, ½ mile south of Pleasantville. Authority?

Well mouth above ocean in feet					1585
?	328	to	328	==	1257
1st SS	30	44	358	=	1227
7	427	"	785	=	800
4th SS	18	66	803	=	782

Wet hole. Cased at 340'. Black oil.

Best production, 90 barrels per day.

52. Maple Shade Well, No. 1. (105)

July 7, 1868.

Brown, Fertig and Hammond tract, 14 miles south of Pleasantville. Authority, ———

Well mouth above ocean in feet					1561
?	768	to	768	=	793
4th SS					775
? pocket,	6	66	792	==	769

Wet hole. Cased at 418'.

Best production, 150 barrels per day. Gas sufficient to fire 4 boilers. Black oil.

This record is unreliable.

53. Holbrook Well, No. 1. (81)

August, 1866.

New York and Providence Petroleum Co. farm, 1 mile southwest of Pleasantville Corners. Authority, R. W. Holbrook.

Well mouth above ocean in feet					1546
? (Interval unknown)	104	to	104	=	1442
1st SS. (First Sandstone)	47	"	151	=	1395
2	147	"	298	=	1248
2d SS	20	"	318	=	1228
• • • • • • • • • • • • • • • • • • • •	205	66	523	===	1023
3d SS	27	"	550	==	996
•	110	66	660	=	886
4th SS	22	"	682	=	864
2	74	"	756	=	790
5th SS pebble,	24	66	780	=	766
9	15	"	795	=	75L
6th SS	30	"	825	=	721
? pocket,	15	"	840	=	706

Wet hole. Cased at 325'. Pumped 72 feet from bottom. Best production, 15 barrels per day. Gas sufficient to fire 2 boilers. Black oil. Gravity, 42°.

The 6th sandrock was found to be a hard, close, white sand. The well has been tubed from 756 feet to 816 feet, with same result. Good show of oil and gas in the 4th SS.

54. Concordia Well. (174)

1868.

North-east part of James Farrel Farm, lease No. 1, 13 miles south-west of Pleasantville. Authority, ——.

Well mouth above ocean in feet					1584
? pocket,	100	to	100	=	1484
1st SS	80	"	180	=	1404
?	180	"	360	=	1224
2d SS	28	**	388	=	1196
?	212	"	600	=	984
3d SS	18	44	618	=	966
?	192	"	810	=	774
4th SS	27	"	837	=	747
, , , , , , , , , , , , , , , , , , , ,	10	"	847	=	737
5th SSsand,	40	66	887	=	697

Wet hole. Cased at 350'.

Best production, a "good show" of green oil. Mud vein at 815'.

55. Baum Well, No. 1. (175)

1868.

South-east part of north half of J. Farrell farm, 1½ miles south-west of Pleasantville. Authority, Grant Parkhurst.

	• .				
Well mouth above ocean in feet					1579
? (Interval unknown)					1489
1st SS. (First Sandstone)	100	66	190	=	1389
?	154	66	344	==	1235
2d SS	20	66	364	=	1215
?	216	"	580	==	999
3d SS	21	"	601	=	978
?			780		799
4th SS	18	"	798	=	781
?	36	66	834	=	745
5th SS	38	"	872	=	707
? pocket,	15	"	887	=	692
TTT . 1 1 0 0 1 . 0 0 0 4					

Wet hole. Cased at 360'.

Best production, 3 barrels per day. Half enough gas to fire one boiler. Black oil in 4th SS., and Green oil in 5th SS. Gravity, black oil 48°, and green oil 46°.

The above well was drilled in the winter of 1867-68; was tested at 810′, and failed to produce oil in paying quantities; was then drilled to the depth of 878′ with the same result. Yellow pebble at 800′, white pebble at 835′. The well has since been abandoned. I do not think it was ever properly tested at 844′, or in the 5th SS.

56. Phænix Well, No. 1. (86.)

August, 1868.

Bates Petroleum Co. tract, $1\frac{1}{2}$ miles south-west of borough of Pleasantville. Authority, ——.

Well mouth above ocean in feet					1526
?	80	to	80	=	1446
1st SS	56	"	136	=	1390
?	131	"	267	=	1259
2d SS	20	"	287	=	1239
?	218	"	505	=	1021
3d SS	15	"	520	=	1006
?	120	"	640	=	886
4th SS	25	"	665	=	861
?	74	"	739	==	787
5th SS pebble and sand,	86?	"	775	=	751

Wet hole. Cased at 510'.

Best production, 90 barrels per day. Gas sufficient to fire 2 boilers. Black oil.

The record of this well, as given in the blank, from the topof the 5th SS down is evidently wrong. It is as follows:

of the sui bb. down is evidency wieng.	
Top of 5th SS	739'
Thickness	28'
Top of 6th SS	761′
Thickness	14'
Depth of well	775']

57. National Well, No. 2. (87)

National Oil Co. tract, 14 miles south-west of borough of Pleasantville. Authority, E. L. Pitcher.

Well mouth above ocean in feet	. .				1532
? (Interval unknown)					1431
1st SS. (First Sandstone)	29	"	130	=	1402
?	150	"	280	==	1252
2d SS	32	44	312	==	1220
?	226	"	538	=	994
3d SS	21	"	559	=	973
?	41	"	600	=	932
4th SS	69	"	669	=	863
?	78	"	747	=	785
5th SS pebble,	15	"	762	==	770
? pocket,	7	"	769	==	763
			_		

Wet hole. Cased at 300'. Pumped 7' from bottom.

Best production, 83 barrels per day. Gas sufficient to fire 11. boilers. Black oil. Gravity, 49°. The 4th SS. is broken by 20' of slate and shelly rock.

GROUP III.

Wells at Shamburg and Vicinity.

58. Pierson Well. (177)

King lot, & of a mile north-east of Shamburg. Authority, William Morgan.

Well mouth above ocean in feet					1590
2	149	to	149	=	1441
1st SS	60	"	209	==	1381
?	147	"	356	=	1234
2d SS	23	"	379	==	1211
,	241	66	620	==	970
3d SS	12	"	632	==	958
?	98	"	730	==	860
4th SS	25	"	755	==	835-

?	77	to	832	=	758
5th SS pebble at top,	10	"	842	===	748
? pocket,	13	"	855	==	735.

Wet hole. Cased at 360'.

Best production, 10 barrels per day. Half enough gas to fire 1 boiler. Black oil.

59. Emory Well, No. 2. (307) August, 1869.

Walter Scott Petroleum Company's tract, adjoining C. Clark farm, half mile east of Shamburg. Authority, ——.

Well mouth above ocean in feet					1647
? (Interval unknown),					
5th SS. (Fifth Sandstone)	18	46	918	==	729
?	12	"	930	==	717
6th SS pebble and sand,	35	"	965	=	682
?	7	**	972	=	675

Wet hole. Cased at —.

Best production, 80 barrels per day. Gas sufficient to fire 1 boiler. Green oil.

This well was put down and tested in the 5th SS., and obtained black oil in small quantities; was afterwards put deeper. This 6th rock is evidently the one called the 5th in Shamburg.

60. Oak Shade Well, No. 1. (128) September 10, 1868.

Clark farm, ten acre lease, near Shamburg. Authority, Geo. W. Arnold, Supt.

Well mouth above ocean in feet			.		1551
?	120	to	120	==	1431
1st SS	93	"	213	==	1338
?	117	"	330	=	1221
2d SS	30	"	360	=	1191
?	226	"	586	=	965
3d SS	14	"	600		951
?	104		704	==	847
4th SS	13	"	717	==	834
?	83	66	800	==	751
5th SS pebble and sand,	65	"	865	=	686

Wet hole. Cased at 345'. Pumped 23' from bottom.

Best production, 40 barrels per day. No gas of any account. Black oil. Gravity, 36° or 37°. Mud veins at 590′ and 850′.

This well was not drilled through the 5th SS. From other wells near by we judge there remain 15' more of sand, which

would make the entire thickness of the sand 65'+15'=80'. The well from the time it was struck has averaged 25 barrels per day. [Jan., 1869.]

61. Lady Jane Well, No. 1. (129) December 13, 1868.

Clark farm, 5 acre lease, near Shamburg. Authority, Arnold & Lockwood.

Well mouth above ocean in feet	<i></i> .				1545
? (Interval unknown)	120	to	120	=	1425
1st SS. (First Sandstone)	116	64	236	=	1309
9	90	66	326	=	1219
2d SS	39	"	365	=	1180
	213	"	5 78	=	967
3d SS	22	66	600	=	945
?	98	"	698	==	847
4th SS	36	"	734	==	811
	66	"	800	==	745
5th SS pebble and sand,	73	66	873	=	672

Wet hole. Cased at 347'. Pumped 22' from bottom.

Best production, 20 barrels per day. Not gas enough to fire a boiler. Black oil. Gravity, 36° or 37°. Mud veins at 340′, 720′, 810′ and 850′. The well was not drilled through the 5th sand by 15′ or 20′. Small division of slate in this sand.

62. Lockwood Well, No. 1. (131) September 20, 1866.

Clark farm, near Shamburg. Authority, E. M. & T. J. Lockwood

Well mouth above ocean in feet					1498
?	103	to	103	=	1395
1st SS	40	44	143	==	1355
	139	"	282	=	1216
2d SS	29	"	311	==	1187
?	219	46	5 30	=	968
3d SS	7	"	537	=	961
?			642		856
4th SS	_a 35	"	677	==	821
9	108	66	785	=	713
5th SS pebble and sand,	46	"	831	=	667
? pocket,	11	"	842	=	656

Wet hole. Cased at 300'. Pumped 40' from bottom.

Best production, 6 barrels per day. Half enough gas to fire one boiler. Color of oil, between black and green. Gravity, 37°. Mud vein at 645′.

The Lockwood well showed evidences of being on the outskirts of the black oil bearing rock, as it produced a large quantity of salt water, and the Shamburg well in close proximity produced light green oil.

63. Fink Well. (127) February 22, 1867.

On lease No. 12, Pittsburg and Cherry Run Oil Company, Shamburg. Authority, John J. B. Fink.

Well mouth above ocean in feet. 1506 ? (Interval unknown) 70 to 70 = 1436 1st SS. (First Sandstone,) white sand 60', gray sand 22'= 82 " 152 = 1354 ? 137 " 289 = 1217 2d SS., white sand and pebbles 16', gray sand 30'= 46 " 335 = 1171
sand 22'=
?
2d SS., white sand and pebbles 16', gray
sand 30'= 46 " 335 = 1171
? 185 " 520 = 986
3d SS 25 " 545 = 961
? 95 " 640 = 866
4th SS., pebbly at top, bottom fine and white, 28 "668 = 838
? 108 " 776 = 730
5th SS loose open rock, 57 " 833 = 673
? pocket, 2 " 835 = 671

Wet hole. Cased at 340'. Pumped 15' from bottom.

Best production, 210 barrels per day. Green oil. Gravity, 48°. Gas sufficient to fire from 4 to 6 boilers. Mud veins at 530′, 645′ and 806′. Crevice at 778′.

We are troubled a great deal with mud running into the well at 806'. The well is still producing, and could be made to pump 20 barrels per day if we could exhaust the mud, and keep the well clean [Jan. 1, 1869].

There are shells ranging in thickness, between the regular Sandrocks which I could not give in this blank.

64. Fink Well, No. 1. (147) May 5, 1867.

Farm of Huidekoper Petroleum Company of N. Y., lease No. 1, 10 acres, Shamburg. Authority, John J. B. Fink.

Well mouth above ocean in feet				• • •	1516
7	100	to	100	=	1416
1st SS	72	66	172	=	1344
- ?					1218
2d SS	24	46	322	=	1194
***************************************	206	"	528	=	988
3d SS	33	"	561	=	955

?	96	to	657	===	859
4th SS	42	"	699	=	817
1	95	"	794	=	722
5th SS pebble at top and bottom,	49	66	843	==	673

Wet hole. Cased at 325'. Pumped 15' from bottom.

Best production, 75 barrels per day. Gas sufficient to fire 2 boilers. Light green oil. Gravity, 46° to 47°.

The oil rock has a 7' shell above it.

This well was finished May 3, 1867. The well will produce an average of from 10 to 15 barrels per day now, Jan., 1869. I have two more wells on this same lease, and their records do not vary much from this one. One is now averaging from 25 to 40 barrels per day, and the other about 6 barrels.

65. Fee Well, No. 1. (139) December 23, 1867.

Atkinson farm, lease 106, Shamburg. Authority, F. E-Hammond.

Wet hole. Not cased. Seed bag at 322'. Pumped 20' from bottom.

Best production, 512 barrels per day. Gas sufficient to fire 6 boilers. Green oil. Gravity, $47\frac{1}{2}^{\circ}$.

This well ceased producing October, 1868. The total production was $49,262\frac{44}{100}$ barrels The largest production was in the month of May, being 11,200 barrels.

66. Jack Brown Well, No. 1. (140) December 27, 1867.

Atkinson farm, lease 108, Shamburg: Authority, F. E. Hammond.

Well mouth above ocean in feet			 .		1539
1 2	98	to	98	=	1441
1st SS	100	"	198	=	1341
· · · · · · · · · · · · · · · · · · ·	112	"	310	=	1229
2d SS	25	46	335	=	1204
9	221	"	5 56	=	983
3d SS	13	"	569	=	970
ALL OR			679		860
4th SS			704		835
7			815		724
5th SS pebble and sand,	40	66	855	=	684

Wet hole. Cased at 320'. Pumped 3' from bottom.

Best production, 441 barrels per day. Gas supplied at one time 15 boilers. Green oil. Gravity, $47\frac{1}{2}^{\circ}$. Mud vein at 830'.

This well ceased to produce August 17, 1868. The total production was $65,916_{100}^{39}$ barrels, averaging 284_{100}^{13} barrels per day from the commencement of production to the close. The average price paid for this oil was \$2.52 per barrel at the well. During the month of April, 1868, it produced 14,500 barrels, and the same was delivered to Pipe Company, averaging 483_{3} barrels daily.

67. Skinner Well, No. 1. (142) April, 1868.

Lease No. 100, Atkinson farm, Shamburg. Authority, F. E. Hammond.

					•
Well mouth above ocean in feet					1543
? (Interval unknown)	101	to	101	=	1442
1st SS. (First Sandstone)	100	"	201	=	1342
?	110	66	311	=	1232
.2d SS	25	"	336	=	1207
?	222	"	558	=	985
-3d SS	13	"	571	=	972
?	199	"	770	=	773
4th SS	25	"	795	==	748
?	23	"	818	=	725
.5th SS pebble and sand,	45	66	863	=	680
?pocket,	5	"	868	=	675

Wet hole. Not cased. Seed bag at 330'. Pumped 18' from bottom.

Best production, 150 barrels per day. Gas sufficient to fire 2 boilers. Green oil. Gravity, 47½°. Mud vein at 828′.

This well produced $11,611\frac{38}{100}$ barrels of oil, 43 gallons to the barrel. This was sold at an average price of \$3.81 per barrel. Well ceased to produce October, 1868.

68. Hammond Brothers Well, No. 1. (144)

January, 1869.

Lease 42, Atkinson farm, Shamburg. Authority, F. E. Hammond.

Well mouth above ocean in feet	,				1581
?	142	to	142	=	1439
1st SS	100	"	242	=	1339
?	135	"	377	=	1204
-02 PG	25	"	402		1179

?					983
3d SS	13	"	611	=	970
?	107	"	718	=	863
4th SS	40	61	758	=	823
?	100	45	858	=	723
5th SS pebble and sand,	45	44	903	=	678
? pocket,	7	"	910	=	671

Wet hole. Cased at 375'. Pumped 5' from bottom.

Best production, 40 barrels per day. Half enough gas to fire a boiler. Green oil. Gravity, 47½°.

69. Tallman Farm Well, No. 2. (135) November, 1868.

Lease No. 2, Tallman farm, near Shamburg. Authority, Lyman Stewart.

Well mouth above ocean in feet					1507
?					1437
1st SS	80	+6	150	=	1357
?	140	"	290	=	1217
2d SS	15	"	305	=	1202
?	225	"	530	==	977
3d SS	25	"	55 5	==	952
2	110	"	665	==	842
4th SS	40	"	705	==	802
?	90	"	795	==	712
5th SS sandy,	48	"	838	=	669
? pocket,	14	"	852	=	655

Wet hole. Cased at 300'. Pumped 12' from bottom.

Best production, 8 barrels per day. Gas sufficient to fire one boiler. Green oil. Gravity, 46°. Mud veins at 673′ and at 828′.

At 511' shelly rock; at 643' crevice of 3". From 643' to 671' we find crevices of from 2" to 8", about 10' apart; at 672' a broken rock, and at 677' a small crevice; at 770' a crevice of 3"; at 788' rough rock. From 801' to 804' pebble rock. 5th SS. rough and broken, with small crevices. No discovery of effects of torpedo on rock, neither did they (we put in 5) improve materially the production.

Note.—The above measurements are taken from Dale's crevice searcher's record, and from the driller's memoranda.

70. Andrews and Stuart Well, No. 1. (149.)

Lease 86, Tallman farm, Shamburg.	A۱	uth	orit	y, -		
Well mouth above ocean in feet					1538	
9.	85	to	85	_	1453	1

1st SS	80	to	165	=	1373
?	145	"	310	=	1228
2d SS	35	"	345	=	1193
?	205	"	550	==	988
3d SS	15	"	565	=	973
?	115	"	680	=	858
4th SS	40	"	720	=	818
?	90	"	810	=	728
5th SS pebble,	50	66	860	=	678

Wet hole. Cased at 320'. Pumped 4' from bottom.

Best production, 300 barrels per day. Gas sufficient to fire 5 boilers. Green oil. Gravity, 48° to 45°. Mud veins at 688′, 712′, 820′ and 850′.

71. Chatfield and Tomlinson Well, No. 1. (183) March, 1867.

Lease No. 12, Henderson farm, Upper Cherry Run, half mile south of Shamburg. Authority, Chatfield and Tomlinson.

Well mouth above ocean in feet					1536
? (Interval unknown)	100	to	100	=	1436
1st SS. (First Sandstone)	95	"	195	=	1341
?	135	"	330	=	1206
2d SS	30	"	360	=	1176
?	290	"	650	=	886
3d SS	20	"	670	==	866
?	30	"	700	=	836
4th SS	40	"	740	=	796
ta 9	55	"	795	==	741
5th SS pebble and white sand,	56	44	851	==	685

Wet hole. Cased with 3 inch casing at 325'. Pumped 8' from bottom.

Best production, 15 barrels per day. Gas sufficient to fire 1 boiler. Green oil. Gravity, 47° to 48°.

The 5th SS. was close and white, with a pebble stratum about 20' from the top.

This farm produces black oil on its east side, from 40 to 60 rods from this well.

72. Nell Well. (189)

August, 1865.

Great Republic farm, 1 mile south of Shamburg. Authority, Thomas H. Gamble.

Well mouth above ocean in feet				•••	1416
	40	to	40	=	1376
1st SS		"	60	=	1356

? 2d SS	25 195 12 118	66 66	275 470 482 600	= = =	1166 1141 946 934 816 776
4th SS?	40 95	66 66	640 735	=	776 681
.5th SS sand, gray, ? pocket,					671 636

Wet hole. Cased at 352'. Pumped 15' from bottom. Production, ———. Black oil; very little gas.

73. Sassafras Well, No. 1. (191) January, 1869.

Beatty farm, lease No. $48, 1\frac{1}{2}$ miles south-west of Shamburg, at the head of Bull Run, on the upper side of the Titusville and Plumer road. Authority, Phil. Beckman.

Well mouth above ocean in feet	<i></i>				1517
? (Interval unknown)	400	to	400	=	1117
1st SS. (First Sandstone)	50	"	450	=	1067
?	128	"	578	=	939
2d SS	30	"	608	=	909
?	92	"	700	=	817
3d SS	34	"	734	=	783
?	126	"	860	==	657
4th SS	14	"	874	=	643
? pocket,	6	"	880		637

Wet hole. Cased at 604'. Pumped 8' from bottom.

Black oil. This well was being tested when the record was being given, and at that time made a good show of black oil.

74. Rensselaer Oil Company's Well, No. 10. (246) February 12, 1867.

On lot 29, Beatty farm, Cow run, property of Clinton Oil Company, $1\frac{1}{2}$ miles south-west of Shamburg. Authority, N. J. Tompkins, Supt.

Well mouth above ocean in feet					1178
Surface sand	25	to	25	=	1153
?	260	66	285	=	893
1st SS	11	**	296	=	882
?	92	"	388	==	790
2d SS	25	"	413	=	765
?	105	"	518	==	660
3d SS white sand and pebble,	27	"	545	==	633
? pocket,	2	"	547	=	631

Wet hole. Cased at 392' with 3 inch casing. Gas sufficient to fire 2 boilers.

Best production, 20 barrels per day. Green oil. Gravity, 47°.

This well has been producing over two years, and has averaged 16 barrels per day during that time. It is now pumping 10 barrels per day [Feb. 26, 1869].

75. Vicker and Russell Well. (192) January, 1867.

Patterson farm, 1 mile east of Pione	eer.	Α	uth	y, —	- .	
Well mouth above ocean in feet					1409	
? (Interval unknown)	712	to	712	=	697	
4th SS. (Fourth Sandstone)	12	"	724	=	685	
?	101	"	825	=	584	
5th SS	25	"	850	=	559	

Wet hole. While drilling this well deeper in hopes of finding a sand-bearing green oil, the tools stuck, and the well was abandoned at the depth of 850'.

GROUP IV.

Wells along Oil Creek Valley, from Foster Farm to Oil City.

76 Sherman Well, No. 1. (276)

On Foster Farm, Oil Creek, three-quarters of a mile above Pioneer. Authority, Josephus Chandler.

Well mouth above ocean in feet					1098
?	147	to	147	=	951
1st SS	18	"	165	=	933
?	132	64	297	=	801
2d SS	15	"	312	=	786
?•,,	118	"	430	=	668
3d SS sand and pebble,	36	66	466	=	632
? pocket,	14	"	4 80	=	618

Wet hole. Seed-bagged on tubing at 300'.

Best production, 1,200 barrels per day. Green oil. Gravity, 45° to 48°.

Gas sufficient to fire 12 boilers.

77. Porter Well, No. 1. (231) 1865.

On Foster farm, on the bank of Oil Creek, above Pioneer. Authority?

Well mouth above ocean in feet					1102
? (Interval unknown)	150	to	150	=	952
1st SS. (First Sandstone)	8	66	158	=	944
?	150	"	308	=	794
2d SS	20	66	328	=	774
?	90	"	418	=	684
3d SS	30	"	448	=	654

Wet hole. Seed-bagged on tubing.

Best production, 200 barrels per day. Green oil.

This well had a connection with the Grand Trunk Well, about ten rods distant from it. When the water was let into the latter well, by drawing the tubing, this well stopped flowing. But when the tubing was replaced in the Grand Trunk, and the pumps started, the Porter Well would again begin to flow.

78. Grand Trunk Well. (232)

1865.

On Foster Farm flats, above Pioneer. Authority, ---- Richards.

Well mouth above ocean in feet					1099
?	150	to	150	=	949
1st SS	7	"	157	=	942
?	151	"	308	==	791
2d SS	20	"	328	==	771
?	90	"	418	=	681
3d SS coarse sand and pebble,	30	"	488	=	651

Wet hole. Seed-bagged on tubing at 310'.

Best production, 40 barrels per day. Green oil. Gravity, 45°.

79. Foster Well, No. 61. (228) January, 1868.

On lease No. 61, Foster Farm, Pioneer, Authority, -Bishop.

Well mouth above ocean in feet					1398
7	624	to	624	=	774
2a SS	12	"	636	=	762
?	96	"	732	=	666
3d SS white sand and pebble,					628
? pocket,	5	"	775	=	623

Wet hole. Cased at 630'. Gas sufficient to fire 2 boilers. Best production, 30 barrels per day.

80. Bishop Well. (229) 1867.

On Foster Farm, near Pioneer. Au	thor	ity	·, —		- .
Well mouth above ocean in feet	· · • · · ·				1360
? (Interval unknown)	20	to	20	=	1340
1st SS. (First Sandstone)	100	"	120	=	1240
?	436	"	556	==	804
2d SS	14	"	570	=	790
,	120	"	690	=	670
3d SS slate, sand and pebble,	35	"	725	=	635
? pocket,	10	"	735	==	625

Wet hole. Cased at 560'. Half enough gas to fire a boiler. Best production, 4 barrels per day. Green oil. Gravity, 49°.

81. Foster Well, Lease 37. (230)

March, 1867.					
On Foster farm, near Pioneer. Au	thori	ty,		-]	Bishop
Well mouth above ocean in feet					
?	562	to	562	=	798
2d SS	10	66	572	=	788
?	118	"	690	=	670
3d SS coarse white sand and pebble,	381	"	7281	=	631_{2}^{1}

Wet hole. Cased at 567'. Gas sufficient to fire one boiler. Best production, 90 barrels perday. Green oil. Gravity, 49°.

82. Well No. 1, Lease No. 2. (240)

July, 1867.

On the Wood farm, near Petroleum Centre. Authority, J. A. Wharry.

						1/21	
Well mouth above ocean in f	eet			• • • • •	• • •	TAOL	
?		250	to	250	=	1231	
1st SS		45	66	295	=	1186	
?		240	"	535	==	`946	
2d SS		50	"	585	=	896	
?		130	"	715	=	766	
3d SS		20	"	735	==	746	
?		77	"	812	=	669	
4th SS		47	66	859	=	622	

Wet hole. Cased at 540'. Gas sufficient to fire 16 boilers. Flowing well. Best production, 150 barrels per day. Green oil. Gravity, 43°.

83. George K. Anderson Well, Lease No. 21. (242) February 14, 1868.

On Wood farm, near Petroleum Centre. Authority, J. A. Wharry.

Well mouth above ocean in feet					1540
? (Interval unknown)	615	to	615	===	925
2d SS. Second Sandstone)	50	"	665	==	875
?	75	"	740	==	800
3d SS	10	64	750	=	790
?	136	46	886	==	654
4th SS pebble,	45	"	931	=	609
?pocket,	49	"	980	==	560

Wet hole. Cased at 660'. Pumped 55' from bottom.

This well was unproductive. It is situated on the highest hill on the Wood farm.

84. George K. Anderson Well, Lease No. 5. (243) April, 1868.

On Wood farm, near Petroleum Centre. Authority, J. A. Wharry.

Well mouth above ocean in feet			• • • • •		1493
?	. 565	to	565	===	928
2d SS	. 45	"	610	==	883
?	. 110	"	720	=	773
3d SS	. 8	"	728	=	765
?	. 107	"	835	=	658
4th SSsand and pebble	, 45	"	880		613
? pocket,		"	881	=	612
Wet hole. Cased at — Gas st	ufficie	nt	to fi	re 2	boilers

S. Best production, 40 barrels per day.

85. George K. Anderson Well, Lease No. 33. (245) February 12, 1868.

On Samuel Wood farm, near Petroleum Centre. Authority. J. A. Wharry.

Well mouth above ocean in feet					1504
?					934
2d SS	50	44	620	===	884
?		44	695	==	809
3d SS		"	701	==	803
?	143	"	844		660
4th SS sand and pebble,	53	"	897	=	607
? pocket,	15	"	712	==	592
777 1 1 1 7 7 7					

Wet hole. Cased at 611'. Pumped 17' from bottom. Gas sufficient to fire 2 boilers.

Best production, 20 barrels per day. Green oil. Gravity, 43°.

86. Well No. 1, Lease 36. (219)

On Stevenson farm, at Petroleum Centre. Authority, Geo. K. Anderson.

Well mouth above ocean in feet				•••	1374
? (Interval unknown)	457	to	457	=	917
1st SS. (First Sandstone)	13	46	470	==	904
?	105	"	575	=	799
2d SS	2	66	577	=	797
?	140	66	717	=	657
3d SS	45	"	762	=	612
? pocket,	10	66	772	==	602

87. Well No. 1, Lease 51. (220)

On Stevenson Farm, at Petroleum Centre. Authority, Geo. K. Anderson.

Well mouth above ocean in feet					1356
•••••••					
1st SS	6	"	434	=	922
?	145	"	579	_	777
2d SS	30	"	609	=	747
?	83	"	692	=	. 664
3d SS	46	44	738	==	618

88. Pinner Well. (221)

February, 1867.

On Robert Stevenson's Farm, about one mile north of Petroleum Centre. Authority, ——.

Well mouth above ocean in feet					1375
?	200	to	200	==	1175
1st SS	40	"	240	=	1135
?	200	"	440	=	935
2d SS	15	"	455	=	920
?	256	"	711	=	664
3d SS sand and pebble,	40	"	751	=	624
? pocket,	14	"	765	=	610
777 1 1 0 1 1 4501					

Wet hole. Cased at 450'.

Best production, 25 barrels per day. Green oil. Gravity, 47°. Gas sufficient to fire 2 boilers.

This well is one of those that need some appliance to draw the gas from the well. We are now [February 12, 1869] using a rotary pump, which not only increases the amount of gas, but helps the production. This well is producing as well as it was two years ago (in 1867).

89. Well No. 1, Lease 134. (213)

On Central Petroleum Co.'s land at Petroleum	n Centre.	Au-
thority, George K. Anderson.		

011011111111111111111111111111111111111					
Well mouth above ocean in feet					1112
? (Interval unknown)	193	to	193	==	919
1st SS. (First Sandstone).=	47	"	240	=	872
?		66	345	=	767
2d SS	7	66	352	=	760
?	123	"	475	==	637
3d SS	39	66	514	==	598
? pocket.	52	"	566	=	546

90. Well No. 1, Lease 305. (214)

On Central Petroleum Co.'s land at Petroleum Centre. Authority, George K. Anderson.

Well mouth above ocean in feet	.	• • •			1263
?	340	to	340	=	923
1st SS	50	"	390	=	873
?	103	"	493	=	770
2d SS	7	"	500	=	763
?	110	"	610	=	653
3d SS	48	"	658	=	605
? pocket,	20	"	678	=	585

91. Well No. 1, Lease 306. (215)

On Central Petroleum Co.'s land at Petroleum Centre. Authority, George K. Anderson.

Well mouth above ocean in feet					1240
?	316	to	316	=	924
1st SS	48	"	364	=	876
?	108	"	472	=	768
2d SS	7	"	479	=	761
?	111	"	590	=	650
3d SS	46	"	636	==	604
? pocket,	12	"	648	=	592

92. Well No. 1, Lease 37. (217)

On Stevenson Farm, at Petroleum Centre. Authority, Geo. K. Anderson.

Well mouth above ocean in feet					1378
?	459				919
1st SS	13	"	472	=	906
?	105	"	577	=	801
	2	"	579	=	799
?	140	46	719	=	659
3d SS					614
? pocket,	29	"	793	=	585

93. Swamp Angel* Well, No. 3. (247)

On lease No. 141, Central Petroleum Co.'s land at Petroleum Centre. Authority, George K. Anderson.

Well mouth above ocean in feet					1098
? (Interval unknown)	185	to	185	=	913
1st SS. (First Sandstone)	15	"	200	==	898
?					765
2d SS	6	"	339	==	759
?	121	"	460	=	638
3d SS	43	"	503	==	595
? pocket,	45	"	548	=	550

94. Swamp Angel Well, No. 4. (248)

On lease No. 141, Central Petroleum Co.'s land at Petroleum Centre. Authority, Geo. K. Anderson.

Well mouth above ocean in feet					1100
?	160	to	160	=	940
1st SS	40	"	200	=	900
?					760
2d SS	6	"	346	===	754
?	119	"	465	==	635
3d SS	45	"	510	==	590
	42	66	552	=	548

95. Abbe and Bailey Well. (283)

1866.

On lease 156, Central Petroleum Co.'s land at Petroleum Centre. Authority, ———.

Well mouth above ocean in feet					1099
?	190	to	190	=	909
1st SS					867
?	108	"	340	=	759
2d SS	20	"	360	=	739
?	103	"	463	=	636
3d SS	40	"	503	=	596

Wet hole. Seed bag at 350'.

Gas sufficient to fire 1 boiler. Mud vein at 340'.

Best production, 15 barrels per day.

^{*}It would puzzle an antiquary of the next century to explain this name; but as it was taken from the army sobriquet of the huge piece of ordnance used before Fort Sumter, the name of the well enables us to assign as its probable date, 1861.

96 Abbe and Bailey Well. (285)

1865.

On lease 179, Central Petroleum Co.'s land at Petroleum Centre. Authority, ———.

Well mouth above ocean level	• • • • •				1099
? (Interval unknown)	185	to	185	=	914
1st SS. (First Sandstone)	45	"	230	=	2 869
?	110	"	340	==	759
2d SS	20	4.6	360	=	739
	105	"	465	=	634
3d SS sand and pebble,	40	"	505	=	594
? pocket,	28	"	533	=	566

Wet hole. Cased at 350'. Gas sufficient to fire 1 boiler. Mud vein at 464'.

Best production, 75 barrels per day. Green oil. Gravity, 46°.

97. Mary Ann Well. (223) April, 1868.

On lease No 24, Bennehoff farm, on the bluff between Petroleum Centre and Pioneer. Authority, Edward E. Partridge.

Well mouth above ocean in feet					
	473	to	473	=	930
1st SS					
?	139	46	623	=	780
2d SS	12	"	635	=	768
?	104	"	739	==	664
3d SS pebble and sand,	41	"	780	=	623

Wet hole. Cased at 624'. Pumped 4' from bottom. Mudvein on top of 3d SS. Best production, 120 barrels per day. Green oil. Gravity, 46°. Gas sufficient to fire 1 boiler. Blower attached as soon as the water was exhausted.

There is a surface sand about 60 feet from the top, and a mountain sand about 100 feet below the surface sand, about 65 feet thick. I believe that wells on the flat do not find either of the above sands. On the hill, we call the sands, first, second, and third sands. Some seed bag in the first sand. I think that the majority of the wells on this farm are seed bagged in the first sand.

98. Harding and Jones Well. (225) February 7, 1869.

On lease No. 9, Bennehoff farm, on the bluff between Petroleum Centre and Pioneer. Authority, N. Jones.

Well mouth above ocean in feet					1451
? (Interval unknown)	300	to	300	=	1151
1st SS. (First Sandstone)	30	66	330	=	1121
?	185	44	515	=	936
2d SS	10	44	525	=	926
?	100	"	625	=	826
3d SS	20	4.6	645	=	806
?	133	"	778	=	673
4th SS sand and pebble,	49	"	827	==	624
? pocket,	8	"	835	=	616

Wet hole. Cased at 520'. Pumped 6 feet from the bottom. Mud vein at 820'. Gas sufficient to fire one boiler.

Best production, 50 barrels per day. Green oil. Gravity, 47°.

99. Courts and Andrews Well. (226) July 30, 1869.

On lease No. 8, Bennehoff farm, on the bluff between Petroleum Centre and Pioneer. Authority, T. I. Thompson, Agent.

Well mouth above ocean in feet					1441
?	60	to	60	=	1381
1st SS	30	"	90	=	1351
?	412	44	502	==	939
2d SS	10	"	512	=	929
?	125	66	637	=	804
3d SS	8	"	645	==	796
?	124	""	769	==	672
4th SS pebble,	43	,44	812	=	629

Wet hole. Cased at 504'. Pumped 4' from bottom. Mud vein at 808'. Gas sufficient to fire 2 boilers.

Best production, 180 barrels per day. Green oil. Gravity, 48°.

100. Stuart Well. (227)

September, 1868.

On lease No. 7, Bennehoff farm, on the bluff between Petroleum Centre and Pioneer. Authority, John Waddell.

Well mouth above ocean in feet					1411:
7	60	to	60	=	1351
1st SS	70	"	130	=	1281

-52 I.I. OIL WELL RECORDS. J. F. CARLL, 1877.

Ŷ	420	to	550	==	861
`2d SS	20	"	570	==	841
	48	"	618	==	793
3d SS	14	44	632	==	779
?	108	"	740	=	671
4th SS sand and pebble,	40	"	780	===	631
? pocket,	2	"	782	=	629

Wet hole. Cased at 554'. Pumped 4' from bottom. Mudvein at 744'.

Best production, 14 barrels per day. Green oil. Gravity, 44°.

101. Blocher Well. (249)

June, 1868.

Columbia Oil Company's "Story Farm," Oil Creek. Authority, George Boulton, Supt.

• • • • • • • • • • • • • • • • • • • •					
Well mouth above ocean in feet	• • • • •				1126
? (Interval unknown)	240	to	240	=	886
1st SS. (First Sandstone)	20	"	260	==	866
?	115	"	375	=	751
2d SS	31	"	406	=	720
Ŷ,·	113	"	519	=	607
3d SS pebble and sand,	52	"	571	=	555
? pocket,	1	"	572	=	554

Wet hole. Cased at 500'. Pumped 8' from bottom.

Best production, 175 barrels per day. Gas sufficient to fire 1 boiler. Green oil. Gravity, 47. No mud veins.

102. Babcock Well. (250)

July, 1866.

Columbia Oil Company's "Story Farm," Oil Creek. Authority, George Boulton, Supt.

Well mouth above ocean in feet		. .			1229
9	345	to	345	=	884
Ist SS	41	"	386	=	843
9	89	"	475	=	754
2d SS	25	"	500	==	729
?	95	"	595	=	634
3d SS pebble and sand,	47	"	642	=	587
? pocket,	5	"	647	=	582

Wet hole. Not cased. Seed bag at 485'. Pumped 10' from bottom.

Best production, 165 barrels per day. Gas sufficient to fire 3 boilers. Green oil. Gravity, 47°. Mud vein at 598°

103. Goe Well. (251)

Columbia Oil Company's "Story Farm," Oil Creek. Authority, George Boulton, Supt.

• •						
Well mouth above ocean in feet					1262	
? (Interval unknown),	380	to	380	=	882	
1st SS. (First Sandstone)	32	46	412	=	850	
?	108	"	520	==	742	
2d SS	27	44	547	=	715	
?	98	"	645	=	617	
3d SS pebble and sand,	42	"	687	==	575	
? pocket,	6	"	693	=	569	

Wet hole. Not cased. Seed bag at 530'. Pumped 12' from bottom.

Best production, 120 barrels per day. Gas sufficient to fire 1 boiler. Green oil. Gravity, 47°. Mud vein at 647′.

104. Reiter Well. (252)

Columbia Oil Co.'s "Story Farm," Oil Creek. Authority, George Boulton, Supt.

Well mouth above ocean in feet					1297
?	420	to	420	=	877
1st SS	35	44	455	=	842
?					742
2d SS	24	44	579	==	718
?	94	"	673	=	624
3d SS pebble and sand,	44	"	717	=	580
? pocket,	5	"	722	=	575 ,

Wet hole. Cased at 565'. Pumped 8 feet from bottom.

Best production, 55 barrels per day. Gas sufficient to fire 5 boilers. Green oil. Gravity, 47°. Mud vein at 676′.

105. Boulton Well. (253)

October, 1868.

Columbia Oil Co.'s "Story Farm," Oil Creek. Authority, George Boulton, Supt.

Well mouth above ocean in feet					1380
?		to	462	=	918
1st SS		"	502	==	878
?	98	"	600	=	780
2d SS	20	44	620	=	760
9	122	"	742	=	638
3d SS pebble and sand,	47	44	789	=	591
? pocket,	5	44	794	=	586

Wet hole. Cased at 470'. Pumped 8 feet from bottom. Best production, 12 barrels per day. Gas sufficient to fire 1 boiler. Green oil. Gravity, 47°. No mud vein.

106. Story Centre Well, No. 1. (284)

July, 1863.

On lease No. 27, Columbia Oil Co.'s "Story Farm," Oil Creek. Authority, George Boulton, Supt.

Well mouth above ocean in feet					1071	
? (Interval unknown)	200	to	200	==	871	
1st SS. (First Sandstone)	40	"	240	==	831	
f	90	44	330	=	741	
2d SS	31	44	361	=	710	
2	104	66	465	=	606	
3d SS sand and pebble,	47	66	512	===	559	

Wet hole. Seed-bagged on tubing at 330'. Pumped 10' from bottom. Gas sufficient to fire 3 boilers.

Best production, 250 barrels per day. Green oil. Gravity, 46°.

107. Phillips Well, No. 2. (255)

1861.

Tarr farm, Oil Creek, 2 miles above Rouseville. Authority,

Well mouth above ocean in feet					1063
7	10	to	10	==	1053
Mountain sand	70	"	80	=	983
7	100	66	180	=	883
Ist SS	30	"	210	=	853
7	111	"	321	=	742
2d SS	27	4.6	348	=	715
7	77	"	425	=	638
Sandy shell	2	66	427	=	636
Slate	4	"	431	=	632
"Gray rock"	40	"	471	=	592
3d SS. not through	10	"	481	=	582

Best production, 3,940 barrels per day, by actual measurement. Green oil. Gravity, 46°. Mud vein at 466′. Size of hole, 4 inches. Tubed with $2\frac{1}{2}$ inch tubing without a working barrel.

This well has produced over 600,000 barrels of oil to present date (March 1, 1869), which has been sold at from 10 cents to \$14 50 per barrel at the well.

It started to flow before drilling was completed, and threw out the water and oil so furiously that the tubing could not be put in to shut of the water for three days, and even then the tubing had to be chained down to keep it from being blown out of the hole.

The well was lately searched by "Dale's Crevice Searcher," which reported a crevice of 3 inches at the depth of $472\frac{7}{12}$ feet.

108. Union Well. (254)

1862.

Tarr Farm, Oil Creek. Authority,		—,	,		
Well mouth above ocean in feet					1072
? (Interval unknown)	195	to	195	=	877
1st SS. (First Sandstone)	30	"	225	=	847
?	100	"	325	=	747
2d SS	25	"	350	=	722
2	130	"	480	=	592
3d SS pebble and sand,	30	46	510	=	562
7777 / 1 . 1 . 7477					

Wet hole. Not cased.

Best production, 200 barrels per day. Green oil. Gravity, 47°.

109. Lynn Well, No. 2. (256) November, 1867.

Lease No. 192, Tarr farm, Oil Creek. Authority, J. H. Dilks.

Well mouth above ocean in feet					1237
	100	to	100	=	1137
1st SS	80	"	180	=	1057
?	240	"	420	=	817
2d SS	20	"	440	=	797
?	90	"	530	=	707
3d SS	32	"	562	==	675
?					600
4th SS pebble and sand,	42	"	679	=	5 58

Wet hole. Cased at 607'. Pumped 7' from bottom.

Best production, 60 barrels per day. Gas sufficient to fire 3 boilers. Green oil. Gravity, 47°.

This well was torpedoed at 649' and 664'. The production before was 15 barrels, afterwards 40 barrels.

110. Sterling Well. (275)

On Tarr farm, Oil creek above Rouseville. Authority, Ambrose John Moran.

Well mouth above ocean in feet					1058
? (Interval unknown)	199	ш	199	==	600
1st SS. (First Sandstone)	30	46	225	=	833
2	85	66	310	==	748
2d SS	30	"	340	=	718
					598
3d SS sand and pebble,	35	"	495	=	563

Wet hole. Cased at 320'. Pumped 1' from bottom.

Best production, 200 barrels per day. Green oil. Gravity, 44°. Gas sufficient to fire 3 boilers. Mud vein at 465'.

111. Byron Mitchell Well, No. 1. (257) November, 1868.

Lease No. 258, Blood farm, Oil creek, 1½ miles north of Rouseville. Authority, S. Hyland.

Well mouth above ocean in feet				•	1315
î	685	to	685	===	630
2d SS	29	"	714	===	601
?	1	66	715	==	600
3d SS pebble and sand,	40	"	755	_	560
? pocket,	3	"	758	==	557
TIT - 1 h - 1 - 1 () - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -					

Wet hole. 'Cased at 685'.

Rest production 120 harrels per d

Best production, 120 barrels per day. Gas sufficient to fire 1 boiler. Green oil. Gravity, 44°.

This well was doing 20 barrels when a torpedo was exploded in it, which had a damaging effect, reducing the production to 8 barrels.

112. Lady Suffolk Well. (258) June. 1868.

Lease No. 240, Blood farm, Oil creek, 1½ miles north of: Rouseville. Authority, A. B. Mudge.

Well mouth above ocean in feet					1340
?	465	to	465	==	875
1st SS	40	66	505	3033	835
?	105	46	610	===	730
2d SS	26	"	636	==	704
?	61	4.6	697	===	643
3d SS "gray rock,"	25	**	722	===	618
?	24	66	746	==	594
4th SS pebble and sand,	37	46	783	===	557

Wet hole. Cased at 706'. Pumped 7' from bottom.

Best production, 85 barrels per day. Gas sufficient to fire 2 boilers. Green oil. Gravity, 45°.

113. Ætna Well. (259)

Lease No. 18, Rynd farm, Oil creek, 1 mile north of Rouseville. Authority, George K. Anderson.

Well mouth above ocean in feet					1049
? (Interval unknown)	190	to	190	==	859
1st SS. (First Sandstone)	28	66	218	=	831
?	114	"	332	===	717
2đ SS	18	66	350	==	699
?	115	66	465	=	584
3d SS	32	"	497	=	552
? pocket,	14	"	511	=	538

114. Pacific Well, No. 1. (260)

January, 1863.

Lease No. 17, Rynd farm, Oil creek, 1 mile north of Rouseville. Authority, Hendrickson and Walker.

Well mouth above ocean in feet					1051
?	195	to	195	=	856
1st SS	25	"	220	=	831
?,	115	"	335	==	716
2d SS	28	4.6	363	=	688
7	110	"	473	=	578
3d SS	35	"	508	=	543
? pocket,	7	"	515	=	536

Wet hole. Not cased. Seed bag at 460'.

Best production, 12 barrels per day. Gas sufficient to fire one boiler. Green oil. Gravity, 45°.

On the Blood and Rynd farms there is a gray SS. lying immediately over the third rock. Most operators think that this gray sand is an oil producing rock.

115. Well No. 23. (261)

August, 1867.

Rynd farm, Oil creek, one mile north of Rouseville. Authority, Supt. of Rynd farm.

Well mouth above ocean in feet				• • •	1049
,	188	to	188	_	861
1st SS	23	66	211	=	838

	117	to	328	=	721
2d SS					695
?	121	"	475	==	574
3d SS pebble and sand,	28	44	503	==	546
? pocket,	10	"	513	==	536

Wet hole. Not cased. Seed bag at 190'.

Best production, 10 barrels per day. Green oil. Gravity, 46°.

There never was an instance on this farm of one well interfering with another. All the wells producing to-day are pumping oil only. No advantage is gained in the amount of gas by the use of casing, and casing is not much used on the farm. [March 2, 1869.]

116. Keir Well, No. 1. (262)

Rynd farm, Oil creek, one mile north of Rouseville. Authority, ——.

Well mouth above ocean in feet					1046
? (Interval unknown)	191	to	191	=	855
1st SS. (First Sandstone)	23	44	214	=	832
?	117	46	331	=	715
2d SS	26	66	357	=	689
?	121	"	478	=	568
3d SS pebble and sand,	30	66	508	==	538

Wet hole.

Best production, 250 barrels per day. Green oil. Gravity, 45°.

This well flowed while being drilled, from the 2d rock, or at 357'. We tubed in this sand, and the well yielded 250 barrels per day for some time, but we spoiled it by shutting off the flow by a stop cock; well was afterwards put deeper, but no increase of oil.

117. Emory Well, No. 1. (263) January, 1865.

A. Buchanan farm, on Cherry Run, one-half mile above Rouse-ville. Authority, A. A. Emory.

Well mouth above ocean in feet					1062
?	212	to	212	==	850
1st SS	37	"	249	==	813
?	106	"	355	==	707
2d SS	30	46	385	==	677

?	111	to	496	===	566
3d SS pebble and sand,	34	"	530	=	532
? pocket,	13	"	543	==	519

Wet hole. Not cased. Seed bag at 360'.

Best production, 28 barrels per day. Half enough gas to fire a boiler. Green oil. Gravity, 43°. Mud vein at 516'.

Very near this well a well was put down which had to be abandoned while drilling in the 2d SS., but it was pumped for an experiment and produced 900 barrels of dark oil.

118. Well No. 13. (264)

December, 1866.

Farm of Union Petroleum Co. of New York, Cherry Run, 3 of a mile above Rouseville. Authority, E. W. Hinds, Supt.

Well mouth above ocean in feet	·				1092
? (Interval unknown)	221	to	221	===	871
1st SS. (First Sandssone)	67	"	288	_=	804
?	86	"	374	=	718
2d SS	26	"	4 00	=	692
?	120	"	520	=	572
3d SS pebble and sand,	31	"	551	7	541

Wet hole. Not cased. Seed bag at 380'.

Green oil. Gravity, 46°. The well is now averaging 3 barrels per day. [March 3, 1869.]

119. Well No. 6. (265)

Farm of Union Petroleum Co. of New York, Cherry Run, 3 of a mile above Rouseville. Authority, E. W. Hinds, Supt.

Well mouth above ocean in feet					1092
?	218	to	218	=	874
1st SS	67	"	285	=	807
?	85	66	370	=	722
2d SS.,	32	4.6	402	=	690
?	118	"	520	=	572
3d SS pebble and sand,	41	"	561	=	531
? pocket,	29	"	590	=	502

Wet hole Not cased. Seed bag at 375'.

Green oil. Gravity, 46°.

120. Munson Well. (267)

October, 1866.

Lease No. 1, Curtin Oil Co.'s tract, on Cherry run, 1 mile above Rouseville. Authority, ——.

Well mouth above ocean in feet					1109
? (Interval unknown)	240	to	240	=	869
1st SS. (First Sandstone)					837
?	108	66	380	=	729
2d SS	28	"	408	=	701
9	132	66	540	=	569
3d SS pebble and sand,	34	"	574	==	535
? pocket,	20	44	594	=	515

Wet hole. Not cased. Seed bag at 410'. Pumped 30' from bottom.

Best production, 120 barrels per day. Gas sufficient to fire 1 boiler. Green oil. Gravity, 46°.

This well is near the celebrated Reed well, and one record will answer for both.

121. Champion Well, No. 2. (268) February, 1868.

Buchanan farm, Rouseville. Authority, Superintendent of Rouseville Oil Co.

Well mouth above ocean in feet				•••	1053
?	200	to	200	=	853
1st SS	33	66	233	=	820
?	117	"	350	=	703
2d SS	25	"	375	=	678
?	115	"	490	==	563
3d SS	15	"	505	=	548
? pocket,	15	"	520	=	533

Wet hole. Not cased. Seed bag at 360'.

Best production, 100 barrels per day. Gas sufficient to fire 2 boilers.

This well only produced for two days; stopped short off. Think it pumped what oil it did from the 2d sand. Think it best not to drill through the 3d sand, less likely to get salt water.

122. Elizabeth Well. (269)

Clapp farm, Oil creek, between Rouseville and Oil City. Authority?

Well mouth above ocean in feet	• • • • •				1011
? (Interval unknown)					
1st SS. (First Sandstone)	20	"	220	=	791
?	140	"	360	=	651
2d SS	15	"	375	=	636
?	85	"	460	=	551
3d SS					521
? pocket,	110	"	600	=	411

Wet hole. Cased at 373'.

Best production, 100 barrels per day. Green oil.

The well is now being pumped from the 2d SS.; is pumping a large amount of water with a little oil, perhaps 6 barrels on an average. [March 4 1869.]

GROUP V.

Wells along the Allegheny River from Oil City to West Hickory.

123. Siverly and Gardner Well. (270)

Lease No. 11, Siverly farm, Allegheny river, 1½ miles above Oil City. Authority, J. W. Gardner, Supt.

Well mouth above ocean in feet					1018
?	260	to	260	=	758
1st SS	20	"	280	=	738
?	110	"	390	=	628
2d SS					608
?	80	66	490	=	528
3d SS pebble and sand,					497
? pocket,	19	"	540	=	478

Wet hole. Cased at 400'.

Best production, ——. Half enough gas to fire a boiler. Green oil. Gravity, 46°.

This well is a fair type of 15 wells on the Siverly farm, which altogether produced 40 barrels per day. They are pumped by heads.

124. Lowell Well. (271) March, 1867.

Howard Oil Association lease, Alcorn farm, Allegheny river, 3 miles above Oil City. Authority, L. Lowell.

Well mouth above ocean in feet					1022
? (Interval unknown)	278	to	278	==	744
1st SS. (First Sandstone)		"	286	==	736
?	70	"	356	=	666
2d SS	9	"	365	=	657
?	29	46	394	=	628
3d SS	21	66	415	=	607
	81	46	496	=	528
4th SSshelly,	34	"	530	\equiv	492
?pocket,	20	46	550	=	472

Wet hole. Cased at 100'.

Best production, 6 barrels per day. Half enough gas to fire a boiler. Green oil. Gravity, 42°.

The wells on the river in this locality do not afford much gas.

Torpedoes have been tried in some wells above Oil City with no advantage.

125. Vandergrift Well, No. 1. (272) August, 1868.

On 10 acre tract, by H. M'Clintock farm, on Allegheny river, about 3 miles below Oleopolis. Authority, J. J. Vandergrift.

Well mouth above ocean in feet				• • •	1045
?	197	to	197	==	848
1st SS	20	"	217	=	828
?	74	44	291	=	754
2d SS	30	66	321	===	724
?	20	"	341	==	704
3d SS pebble,	18	**	359	=	686
? pocket,	11	"	370	=	675

Wet hole. Seed-bagged on tubing at 120'.

Best production, 1 barrel per day. Green oil. Gravity, 40°. Half enough gas to fire a boiler.

This well is in the vicinity of a number of wells, all of which are pumping oil from the 2d sand. The oil is of lighter color, but heavier gravity, than the Oil creek oil. Some of these wells have been pumping for six years. [March 5, 1869.]

126. Madden Well. (273)

1865.

On Anderson Petroleum Co.'s farm, Allegheny river, $\frac{1}{2}$ mile below the mouth of Pithole creek. Authority, ———.

bolow and mount of rimidle creek.	Luom	,,,,,	·y, -			
Well mouth above ocean in feet					1038	
'? (Interval unknown)	160	to	160	==	878	
1st SS. (First Sandstone)	44	"	204	==	834	
	83	"	287	=	751	
2d SS sand and pebble,					733	
? pocket,	4	66	309	==	729	

Wet hole. Seed bag at 170'.

Best production, 60 barrels per day. Amber oil. Gravity, 42°.

It is said that the 3d sand has not been found in this locality, though wells have been drilled 600' and 800' deep.

127. Smith and Schribel Well. (299) June, 1869.

Hussey and M'Bride farm, Henry's Bend, Allegheny river. Authority, ——.

Well mouth above ocean in feet						
·	149	to	149	=	884	
Ist SS	22	"	171	=	862	
?	62	"	233	=	800	
2d SS	10	i,	243	=	790	
Red slate					779	
3d SS	12	"	266	=	767	
?pocket,	3	"	269	==	764	

Wet hole. Cased at 150'.

Best production, 8 barrels per day. Amber oil. Gravity, 42°. Another well on the side hill 109′ above this well went through 3d SS. at 375′. This well is about 10′ above surface of river.

128. Hunter, Herbert and Carll Well. (306)

Hunter run, ½ mile from Allegheny river, opposite Tionesta, Forest county. Authority, John F. Carll.

Well mouth above ocean in feet	• • • • •				1098
?	160	to	160	==	938
1st SS	_				930
. ?	90	"	258	=	840
2d SS	8	"	266	=	832:

64 I.I. OIL WELL RECORDS. J. F. CARLL, 1877.

?	15	to	281	=	817
3d SS					807
?					792
4th SS coarse pebble in red mud,					777
?	116	"	437	=	661

Wet hole. Some oil and gas.

129. Hamilton Well. (200) September, 1869.

2d SS..... not through, $6\frac{1}{2}$ " $166\frac{1}{2}$ = Wet hole. Not cased. Seed bag at 104'.

Best production, 60 barrels per day. Green oil. Gravity, 33°.

9391

This well, like most others on this and adjoining farms, pumps a large amount of water, which is supposed to come into the well with the oil. November 5, 1869, it was pumping 6 to 10 barrels of heavy oil with 100 to 200 barrels of water.

GROUP VI.

Wells at Enterprise in Warren County.

130. Benedict Estate Well, No. 1. (167) Summer of 1865.

Benedict Estate Farm, Enterprise, Warren county. Authority.

10,1,					
Well mouth above ocean in feet					1241
?	192	to	192	=,	1049
1st SS	50	"	242	=	999
?	58	"	300	=	941
2d SS	6	"	306	=	935
7	29	"	335	=	906
3d SS	10	"	345	=	896
£ ?	97	"	442	=	799
4th SS	6	"	448	==	793

7	14	to	462	=	779
5th SS pebble,	15	66	477	=	764
? pocket,	10	66	487	==	754

Wet hole. Cased at 342'. Pumped 10 feet from bottom.

Best production, 8 barrels per day. Half enough gas to fire 1 boiler. Green oil. Gravity, 47°.

131. M'Kinney Well, No. 1. (170) March, 1869.

Lease No. 9, Benedict Estate Farm, Enterprise, Warren county. Authority, C. B. M'Kinney.

Well mouth above ocean in feet		• • • •			1228
? (Interval unknown) estimated,	183	to	183	=	1045
1st SS. (First Sandstone)	50	"	233	==	995
?	79	"	3,12	=	916
2d SS	10	"	322	=	906
?	88	"	410	=	818
3d SS	20	"	430	=	798
?	10	"	440	==	788
4th SS pebble,	16	"	456	=	772
? pocket,	18	"	474	=	754

Wet hole. Cased at 308'.

Best production, 180 barrels per day. Gas sufficient to fire 2 boilers. Green oil. Gravity, 45°.

The 4th SS. is the oil-bearing rock. The 2d SS. contains large veins of salt water. The well has been run one month and is as good as ever on an average.

132. M'Kinney Well. No. 2. (171) August, 1868.

Lease 17, Benedict Estate, Enterprise, Warren county. Authority, C. B. M'Kınney.

Well mouth above ocean in feet					1231
? estimated,	196	to	196	=	1035
1st SS	60	66	256		975
?	58	"	314	=	917
2d SS pebble,	14	1,66	328		903
9	86	* *	414	==	817
3d SS	20	"	434	=	797
?	10	"	444	==	787
4th SS pebble,	21	"	465	==	766
? pocket,	17	"	482	=	749

Wet hole. Cased at 335'. Pumped 6 feet from bottom. 5—I.I.

Best production, 30 barrels per day. Gas sufficient to fireone boiler. Green oil. Gravity, 45°.

A torpedo improves the well. 2d SS. contains salt water. 4th SS. is oil producing.

GROUP VII

Wells at Church Run and in its Vicinity, in Crawford County.

133. Eureka Well. (202) November, 1865.

On land of Atlantic and Great Western Petroleum Company, on Church Run, one and a-half miles north-east of Titusville, Crawford county. Authority, H. S. Rogers, Superintendent.

Well mouth above ocean in feet					1333
? (Interval unknown)	230	to	230	=	1103
1st SS. (First Sandstone)	67	44	297	=	1036
?	174	44	471	=	862
2d SS	15	"	486	==	847
,	18	66	504	==	829
3d SS very coarse with pebbles,	70	16	574	=	759
? pocket,	10	44	584	=	749

Wet hole. Cased at 350'. Pumped 15' from bottom.

Best production, 175 barrels per day. Gas sufficient to fire 3 boilers. Green oil. Mud veins are found in some of the wells on the higher ground, but were rare in the Eureka well.

This well, from the long time it has been pumping, can beconsidered to be one of the most remarkable in this region, having been one of the first drilled on Church Run. It now averages 140 barrels per week. [Feb., 1869].

When first started it produced about 52 barrels per day. It gradually ran down until in May 1868, it was producing about 25 barrels per week.

It was then cleaned out, casing and seed-bag being drawn, and torpedoed in the middle of the 3d sand. Casing was then put in, and it was started up, and for some days produced 175-

barrels per day. Referring to the books, I find that in one-week it pumped 910 barrels of the best, clear Church Run oil. We find that a torpedo, every six weeks, is required to be exploded in the middle of the third sand, to open up and clean the rock. There is still sufficient gas to run the engine. [Feb., 1869].

The company are now pumping their eleventh well. Out of this number but two have proved failures-

134. Niagara Well, No. 1. (201)

May, 1867.

On three acre tract, formerly Cadwallader and Morse, at Church Run, Crawford county. Authority, ——.

Well mouth above ocean in feet	• • • • •				1318	
? (Interval unknown)						
1st SS. (First Sandstone)	40	44	258	==	1060	
?	200	"	4 58	==	860	
2d SS	15	"	473	=	845	
7	16	"	489	==	829	
3d SS pebble and sand,	65	"	554	=	764	
,? pocket,	9	"	563	==	755	

Wet hole. Cased at 300'. Pumped 13 feet from bottom. Best production, 25 barrels per day. Gas sufficient to fire 1 boiler. Green oil. Gravity, 45°.

135. "Ike" Weed Well. (204)

January, 1867.

On tract of Williams, Severance and Co., on Church Run, one and a quarter miles north-east of Titusville, Crawford county. Authority, L. H. Severance, Treasurer.

Well mouth above ocean in feet		• • • •			1400
?	298	to	298	=	1102
1st SS	30	"	328	=	1072
?	209	"	537*	=	863
2d SS	15	"	552	==	848
?.,	19	"	571	=	829
3d SS pebble,	66	66'	637	=	763
? pocket,	9	46	646	==	754

Wet hole. Cased at 400'. Pumped 35' from bottom. F'
Best production, 15 barrels per day. Oil green. Gravity,
47°. Gas sufficient to fire 1 boiler.

68. T.T.

Well is now (February 12, 1869,) pumping on an average 6 barrels per day. Are only running it in the day, making but 12 hours pumping. With torpedoes, has pumped 10 barrels per dav.

136. Humphrey Well, No. 2. (205) December, 1868.

On Atlantic and Great Western Petroleum Co.'s tract on Church Run, 12 miles north-east of Titusville, Crawford county. Authority. ----

Well mouth above ocean in feet					1431
? (Interval unknown)					
1st SS. (First Sandstone)	60	66	390	==	1041
?	175	"	565	=	866
2d SS	25	66	590	=	841
· · · · · · · · · · · · · · · · · · ·	20	"	610	==	821
3d SS sand and pebble,	62	"	672	==	759
? pocket;	3	"	675	==	756

Wet hole. Cased at 404'. Pumped 14' from bottom.

Best production, 300 barrels per day. Green oil. Gravity, 45°. Gas sufficient to fire 3 boilers.

This well is now (February 9, 1869,) pumping 65 barrels per day.

137. Yreka Well, No. 1. (206) August, 1868.

On the Weed Farm, Church Run, 11 miles north-east of Titusville, Crawford county. Authority, Chester Morse.

Well mouth above ocean in feet				• • •	1460
***************************************	365	to	365	=	1095
1st SS:	63	66	428	==	1032
? including 2d SS	212	"	640	==	820
3d-SS sand and pebble,	60	"	700	===	760

Wet hole. Cased at 365'.

Best production, 70 barrels per day. Gas sufficient to fire 21 boilers. Green oil. Gravity, 45°.

138. King Well. (211) 1864.

On Watson Flats, one-half mile south of Titusville, Crawford county. Authority, ----.

7..... 170 to 170 = 1004

1st SS	20	to	190	==	984
***************************************		"	380	==	794
2d SS	35	"	415	=	759

Wet hole. Cased at 180'. Pumped 10 feet from bottom.

Best production, 10 barrels per day. Green oil. Gravity, 44°. One-half enough gas to fire a boiler.

This well has been pumped nearly all the time since it was struck, while in the immediate vicinity many have been abandoned and left without any seed bag. It is the opinion of many, that if three-fourths of the holes on the flat were seed-bagged the other fourth would be paying wells at the present time [about Jan., 1869].

GROUP VIII.

Miscellaneous Wells.

139. *Major Well*. (279)

On Major farm, section 1618, Sparta township, 2½ miles S. E. of Spartansburg, Crawford county. Authority, Wm. Johns.

Well mouth above ocean in feet					1606
? (Interval unknown)	205	to	205	=	1401
1st SS. (First Sandstone)	15	"	220	=	1386
9	240	44	460	=	1146
2d SS white, coarse,	25	**	485	=	1121
9,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	260	"	745	=	861

Wet hole. Seed-bagged on tubing at 210'. Gas sufficient to fire 15 boilers. No oil.

This well was tested by pumping it for one day, when it gave signs of flowing. The second day the rods and valves were drawn, when it commenced flowing gas and water at the rate of about 100 barrels per day, and continued thus for six months. The tubing was then drawn to explode a torpedo. It was afterwards tubed, and flowed water for 9 months, when the seed-bag burst. Since then nothing has been done to it. At one time the water flowed outside of the tubing, and was thrown 15 feet high.

140. Well No. 175. (301)

Triumph Oil Company, Triumph, Warren Co., 2 miles southwest of Tidioute. Authority, Superintendent of farm.

Well mouth above ocean in feet					1691
? (Interval unknown)	224	to	224	=	1467
1st SS. (Ftrst Sandstone)					1439
?		46	457		1234
2d SS	18	66	475	=	1216
7	85	"	560	=	1131
3d SS	22	46	582	=	1109
?	120	"	702	=	989
4th SS not through it,	40	"	742	=	949

No well on this farm has drilled through the 4th sand, though some have gone 80' into it. No oil is obtained below 10' to 20' from the top of the rock. At the present time this well is being drilled deeper into the sand.

Most of the wells in Dennis Run use gas pumps. [Nov. 4, 1869.]

141. Jocelyn Well, No. 1. (294) April 14, 1866.

Located on lease No. 1, plot 7, section C of the Jocelyn oil lands (old Green farm), 4½ miles south-east of Pleasantville, and 3 miles south of Neilltown, Forest county. Authority, A. H. Jocelyn, Vice President.

Well mouth above ocean in feet		. .			1603
?	112	to	112	=	1491
1st Mt. SS	50	46	162	=	1441
*	150	"	312	=	1291
2d Mt. SS	25	"	337	==	1266
?	243	"	580	=	1023
1st oil SS	78	"	658	=	945
7	27	"	685	=	918
2d SS	25	"	710	==	893
?	70	"	780	==	823
3d SS	45	"	825	==	778
?	17	"	\$42	=	761
4th extra SS white pebble,	15	"	857	==	746
•	143	66	1000	==	603

Wet hole. Not cased. Pumped at 800' from top.

Best production, 1 barrel per day. Little gas. Black oil. Gravity, 40° and 47°. Mud vein 790′ to 798′.

"Owing to accident, losing tools in this well, and fishing for them several weeks in a stiff mud vein at top of the pebble rock, the well was spoiled. She was afterwards drilled to 1000' as an experiment, to ascertain the fullest extent of geology, but found nothing of importance below 857', and the full regular oil-bearing rocks ending at 857'. It is my opinion, after careful study and practical knowledge, that this land is equal to the best oil territory, and with further developments will prove an extended oil field. This geology differs from all below on Stuart's Run."

The foregoing records are published to secure them against accidental loss by fire or otherwise, and to place them in a convenient form for reference. Many of them are imperfect, and some, without doubt, do not correctly represent the stratification of the rocks drilled through; still they are of great value, and when the whole series is completed there will be a sufficient number of approximately reliable ones to exhibit in a very satisfactory manner the general underground structure to any one who will take the trouble to study it out. Their value will be more apparent years hence than it is now, when the old districts are again worked over, as they undoubtedly will be, and the early records are not otherwise to be obtained. During the first development of a district, when scores of wells are in operation, almost every well owner or employé has a knowledge of the rocks sufficient for all practical purposes; but when the district has become partially exhausted and the original operators have moved forward to other fields, leaving new men behind who know very little of the history of the wells, then these printed records will be sought after and appreciated.

If this plan of preserving records had been adopted when oil was first discovered and followed up to the present time what a vast amount of valuable material would now be accessible to all. Thousands of faithfully kept registers have been made. Some were merely written in a convenient place on the derrick or engine house and perished with the well; some were kept in daily hand books which were discarded and destroyed as they became old; many have been consumed by fire, that inevitable visitant of all our oil towns; and others are now stowed away among the oil region relics of those who have left the country, and scattered almost to the four corners of the earth. Scarcely one in a hundred of them can now be found.

Those who have well records in their possession can now have them published and preserved with the papers of the survey by mailing them to the headquarters of the Oil District at Pleasantville, Pennsylvania. They will be printed in pamphlet form from time to time as they accumulate in sufficient numbers, for free distribution to those who have contributed them.

In examining these records it will be observed that the first column of figures gives the thickness of each sand-rock or interval; the second, the depth from the surface to both the top and bottom of each sand-rock or interval; and the third, the elevation above ocean (where it is known), so that it can be seen at a glance, without any calculation, just what the thickness of each formation is, how far it lies below the surface, and how high above the ocean. This form of keeping records, if universally adopted, will be found to greatly facilitate their comparison and study.

CHAPTER II.

Extra List of E. S. Nettleton's Venango Oil Well Levels of 1868'-9; without records.

Of the following wells (numbered by Mr. Nettleton as explained in Chapter I) he obtained no records of the rocks passed through, nor of the depth, quantity and quality of the oil. But it is proper to place his own levels of their mouths, (corrected by Mr. Carll, May, 1877, for the final datum level of Oil City Union Depot RR. grade above ocean level in Raritan Bay=1008') on permanent record here, because descriptions of these wells may exist in the hands of persons who can insert them hereafter in this book.

The first column of figures is for the Running Number of Well in the Index to this book.

The second column gives Mr. Nettleton's Original Number of Well, taken from his notes.

The third column gives Name of Well.

The fourth column Location of Well.

The fifth column Height of Well-mouth above ocean in Raritan Bay.

I. Pleasantville Borough and Vicinity.

282	2	Woodford	s. m.	Dunhan	Farm	1714
283	55	Meadville No. 1	66	44	"	1637
284	56	Wing	66	66		1691
285	58	Jennie	46	44	"	1677
286	59	M'Gee	46	46	"	1665
287	8	Byers& Satterfield	Morri	ison Farr	n	1715
288	4	Grey Eagle	"	46		1704
289	6	Comer	Jack	Farm	********	1692
290	9	Orchard	Newl	cirk Fari	n	1693
291	10	Sherman		" [E.	of borough]	1591

292	12	M'Clintock Small Farm	1672
293		" gas well " [N. of borough]	1606
294	21	Lone Star James Farm	1704
295	24	Excelsior " " [formerly	1661
296	25	Eagle " " Merrick Farm]	1662
297	26	Morning Light " "	1662
298	27	Manual or Reliance A.W.Brown's lot, Merrick st.	1652
299	17	Fisher Bros Brown & House Tract	1637
300	22	Lightning " " "	1691
301	112	United States, No. 38 " " "	1637
302	19	Ruby Mattison Farm	1622
303		New well pumping in 1875 " "	1566
304	13	Green Flag A. W. Brown Farm	1693
305	32	Pierce and Bagley Connelly Farm	1675
306	39	Collins Bros., No. 17 Mitchell Farm	1676
307	40	" " 18 " "	1683
308	62	Black Flag Holeman & Newkirk tract	1675
309	61	Clark & Allen Geroe Farm	1687
310	33	Goss & Goal, No. 3 Shugert Farm	1665
311	34	Shakely " "	1655
312	36	Goss & Goal, No. 1 " "	1649
313	38	Beam, No. 3 " "	1666
314	35	Myrtle, Fisher Bros Zuver Farm	1642
315	41	Fisher Bros., No. 1 " "	1633
316	281	Goss & Carll, Rainbow, No. 1, Hebert Farm	1633
317	45	" No. 2, " "	1640
318	46	Goss Bros " "	1637
319	282	Fisher Bros., No. 2 " "	1650
320	47	" No. 5 " "	1639
321	63	John Hoop " "	1659
322	160	Jenkins " "	1663
323	64	Dalzelle " "	1648
324	65	Fisher Bros., No. 6, (gas); " "	1660
325	66	Hyde & Coleman " "	1666
326	67	Spartansburg " "	1664
327	48	Iron City, Burchfield Porter Farm	1633
328	50	Grant, No. 1 ", "	1617
329	51	" No. 2 " "	1610
330	52	Harmonial, No. 3: " "	1611
-331	68	M'Grew Bros Brown Bros. Tract	1651
332	69	« « « «	1642
333	71	Haskell " "	1622
234	72	Marr " " "	1597
335	73	Freeman	1598
336	74	Queen	1575
337	75	Fisher, "C" " " "	1576
338	76	Beaufort	1577
339	114	Branch Jack Farm	1601
340	115	Cady, No. 1 " " [S. of borough]	1605
341	106	Collins Bros., No. 7 Armstrong Farm	1604
342	96	Rice, No. 2	1644
343	107	•	1617
629	101	Stock	TOTA

		•	
344	108	Hart Armstrong Farm	1588
345	109	Wilson " "	1581.
346	111	Harmonial, No. 4 " "	1617
347	77	Little Giant Vesta Petroleum Co	1566
348	78	Pierce and Bagley " " "	1570
349	79	Brooklyn " " …	1563
350	98	Carroll Ensign Farm	1643
351	99	Homestead, No. 3 " "	1627
352	100	Young America	1621
353	101	Jones " "	1609
354	82	Smith Davis Farm	1552
355	80	Holbrook, No 2 N. Y. & Providence Pet. Co.,	1559
356	83	Maple Shade, No. 1 S. Q. Brown and others	1549
357	104	" "No. 3 " " "	1575
358	84	Johnson " " " …	1554
359	91	Rock Byles Farm	1585
-360	92	Foggin	1601
361	93	Smith	1625
362	94	Hughes & Harrison	1633
363	103	Lady Byles Farm	1590
364	85	Phœnix, No.2 Bates Petroleum Co	1532
365	88	National, No. 1 National Petroleum Co	1536
366	89	Say & Williams Hebert "Mill Farm" Reserve	1521
367	90	Collins, Pratt & Sumner Mill Farm	1531
368	176	Whale Independent Oil Co	1608
369	161	Nameless Clark Farm	1619
370	162	Clark, No. 1 " "	1617
371	164	Golden, No. 2 Golden Farm	1560
372	123	M'Nair Bean Farm	1504
373	126	Odell " "	1506
374	122	Lamb Lamb Farm	1529
375	290	Sherman J. Y. Siggins Farm	1585

II. Shamburg and Vicinity.

376	130	Shamburg	, No. 1	Shambur	g	1498
377	132	44	No	66	*************	1506
378	146	"	No. 5	"	*************	1500
379	133	46	No. 8	66		1499
380	134	Hewins,	No. 6	46	**************	1505
381	148	Fink,	No	4.6	• • • • • • • • • • • • • • • • • • • •	1517
382	136	Tallman		Tallman	Farm	1532
383	137	Long & Ra	ymond	"	"	1537
384	138	R. W. Hall	1	"	"	1537
385	141	Hidden		Atkinson	Farm	1541
386	143	Myers & Sl	horman	"	"	1541
387	145	Pierce & B	agley	"	"	1516

76	I.I.	OIL WELL RECORDS. J. F. CARLL, 1877.	
388	150	Tallman, No. 112Tallman Farm	1540° 1538
389	151		
390	152	Spear	1543 1543
391	153	Fee, No. 7. S. P. & Co., No. 3.	1564
392 393	154 155	" No. 6	1568
394	156	" No. 14	1589
395	157	" No. 65.	1581
396	159	Farwell Farwell Farm.	1692
397	184	M'Nair, No. 1 Cherry Run	1445
398	185	" No. 2 " "	1480
399	186	Brown, No. 1 Great Republic Tract	1439
400	187	" No. 2 " " "	1434
401	188	Lambert " " "	1423
402	193	Pryer, No. 1 Bull Run	1308
403	194	Orthodox " "	1257
404	195	Johnson " "	1242
405	196	Graff "	1145
408 407 408 409 410 411 412 413 414 415 416 417	197 216 218 224 233 234 235 236 239 241 244 266	Noble	1098 1368 1370 1435 1090 1080, 1077 1075 1461 1501 1489 1115
418 419 420 421 422	166 168 169 172 173	Go in and win Enterprise. Reed. " Harvey " Williard. " Smith "	1249 1256 1231 1234 1233
423	199	Ash Ash Farm near Enterprise	1551

CHAPTER II.

V. Church Run and Vicinity.

424 425 426 427 428	203 207 208 209 210	Sutter	1343 1465 1482 1486 1174
		water-transferred	
		$VI.\ Miscellaneous.$	
		Namestania	
429	295	Jocelyns, No. 2 Green Farm, head of Stew- art's Run	1541
430	296	Hinkley Farm, head of Allender Run	1378
431	297	Pratt Pratt Farm, Pithole Creek.	1472
432	298	Blanchard Near President	1259
433	300	Hamilton Mouth of West Hickory Cr	1106

434 Sherman Well

CHAPTER III.

Extra List of J. F. Carll's Venango Oil Well Levels in 1874.

Of the following wells lying along the lines run for the purpose of obtaining reliable original data for Report of Progress I, 1874, whatever records were afterwards obtained are given in other parts of this volume, and may be found by reference to the names and numbers of the wells arranged in alphabetical order in the Index. Such wells and others of which no geological description has yet been obtained, are here recorded in the geographical order of the lines run, with their levels above ocean in Raritan Bay, adjusted May, 1877, on the basis of the final determination of Oil City Union Depot RR. grade=1,008'.

LINE A.

From Pleasantville to Church Run.

This line was run in 1874 from Ennis Hill along the Plank Road to Hinkley's Refinery at Titusville; thence over the Parker farm hill across the Spring Creek road and down into the valley of Church Run; thence through the developments on the Beach and M'Guire farms, and thence to the highest point on the A. J. Kerr farm.

I V Sigern's Form

7505

T. J.T.	Sherman	AA OTT	• • • • • • • • • • • • • • • • • • •	0. 7. 0	iggin :	s Traiting			7000
435	Peanut	"		King F	arm—	(M'Gee	hill)		1468
			RR. crossing				•		
	of Pla	ank Roa	d at East Ti-						
	tusvil.	le		· • • · · · · • •		. .			1184
436	E. Well o	f Double	e rig	Bunke	r Hill	Lot, T	itusvill	e	1209
437	W. "	66	46	66	66	"	46		1208
438	Fowler, N	Го. 1		Parker	Farm				1512
439	Parker, N	o. 1		"	"				1554
440	" N	o. 3		66	".				1532
441	" No	0. 5	• • • • • • • • • • • • • • • • • • • •	4	"				1551
									

442 Scott, No. 3	Barnsdall Farm,	Church	Run 1538
444 Flowing water well	Church Run Wall	ar ton	of d nine 1998
445 Surface of water			
446 Phillips, No. 1			
	"	"	1549
448 Grey, No. 2	"	66	1557
449 " No. 4	"	66	1569
450 " No. 6	46	66	1561
451 Thomas Bros. Well	M'Guire Farm,	44	1589
452 Boyer and Lufkins Well	"	44	1592
453 M'Cort, No. 3	46	66	1602
454 " No. 5	44	46	1604
455 Smiley, No. 6	A. J. Kerr Farm,	"	1603
456 " No. 16	"	66	
457 " No. 18	66	"	1603

LINE B.

From Pleasantville to Tionesta.

This line was run in 1874 from Ennis Hill to Farmers' Hotel; thence along the Plank Road to Cashup Hill; thence along Johnson's Run road to Dawson's Corners, and thence along the Pleasantville and Tionesta highway to the river.

458 M'Gee	S. M. Dunham Farm 166	6 4 ,
459 Preston		57
460 Pettibone	Wrigglesworth Tract 163	
461 M'Vey	. "	
462 Merrill	" … 160	
463 M'Vey	" " … 160 " " … 160 " " … 155	07
464 Preston		9 2 ,
465 "		85
466 Benedict	Benedict and S. Q. Brown Farm 16	04
467 Orchard	. " " … 15	94
468 Benedict & Son		65
469 " "		65
470 Ledsham	10	
471 " No. 2		
472 Wood No. 13	William Wood Farm 15	65
473 Hoyt		70
474 Stoddard and Frank, No. 4	. "	55
475 " " No. 3		58
476 ". " No. 2	. " " 15	54

477 Goss & Goal	Nesbi	t Lot		1530
478 Fisher, No. 2	Tyrrel	l Farm		1518
B. M. Rock opposite Far-				
mers' Hotel	*6	"		1523
479 Well near Oil Dump	"	"		1518
480 Harsh	Bean I	arm		1513
481 "	44	"		1506
482 "	44	"		1512
483 Hoag	66	"		1505
484 "	66	"		1502
485 Minor, No. 1	S. Min	or Farm.		1494
486 " No. 2	"	16 .		1491
487 Slingerland	Stewar	t Tract, C	Cashup	1600
488 Holmes & Brown, No. 1	Harsh	44	"	
489 Harsh, No. 8	66	" (n	ear road) (Cashup 1622
490 " No. 10	66	" (7	V. of road)	" 1610
491 " No. 11	"	66	"	", 1603
492 " No.14	66	"	66	" 1593
493 " No. 13	46	66	44	" 1593
494 " No. 6	"	46	44	" 1569
495 " No. 16	44	"	46	" 1565
496 " No. 3	46	44	44	" 1555
497 " No. 2	"	64	44	1552
498 " No. 7	66	" (n	ear road) (Cashup 1623
499 Bronson, No. 8	Bronso	•		1634
500 " No. 7	44	46	-	
501 " No. 10	c ę	46	"	1689
502 " No. 6	"	*6	"	1646
503 " No. 4	46	"		
504 " No. 5	"	44	46	1657
505 4 No. 2	66	46		1653
506 Emery-Octave, No. 1	Harsh	Tract, Ca	shup	
507 Kratzer	4.6	"		1660
508 Charles Scott, No. 1	66	66		1663
509 M'Laughlin,* No. 1	A.W.	& J. F. B		Cashup 1640
510 M'Laughlin, No. 5	44	£ 6	44	" 1624
511 Kratzer, No. 1	44	66	66	" 1614
512 Chase & Collins	(f Ffrai.	dalzonar i	7 (N road	i,) Cashup, 1632
513 "			(S. road	
514 Gas well, 1865				company 1550
B. M. on rock near oak N		0111 740 44	TOTA OIL	ompany 1000
of road, 75' S. E. of John-				
son's Run	-			1491
B. M. on oak S. of road W			*******	TO CONTRACT AND
line of Dawson Farm				1400
		• • • • • • • • •	*******	148U
B. M. on large rock, Daw- son's Corners				7404
Stewart's Run Bridge, Daw-			* • • • • • • • • • • • • • • • • • • •	
son Farm				1400
		••••••	• • • • • • • • • • •	1300
S. W. under Bridge, Aug. 24, 1874. Stewart's Run				1905
27, 1017. Didwald S.Rull				1989

^{*1,000} barrels.

.515 Old Well
.516 Old Well In field back of Dawson's barn, and
S. of house. Dawson Farm 1406 B. M. on rock extending
across the road N. of Hu-
ling's house
River Hill crown, road cen-
tre, S. of Huling's house
517 Hunter Well, 1872, 1,200' deep
—no 3d SS G. S. Hunter Farm 1630
B. M. on large rock W. of
road 230' above spring 1492
"Hillside Spring" G. S. Hunter Farm
RR. track road crossing Tionesta Depot 1060
518 Hunter Well, 1865. Heavy oil. Near Tionesta Depot 1055
519 Hunter, Hebert & Carll Well,
1869 Hunter Run, $\frac{1}{2}$ mile from river 1098
Surface of water in the Al-
legheny River, August 26,
1874. Opposite Tionesta
Dépôt 1044

LINE C.

From Pleasantville to Tidioute.

This line was run in 1874 from Ennis Hill along Neilltown road to Cattaraugus school house; thence north to Shelmandines; thence across farms to Lower Colorado; thence along the main development to Clapp farms; thence along Triumph road and down Dennis run to the Allegheny river.

1 02	id and down bo	111110	1 ul		10 111108	dony liver.	
-520	Orchard well		••••	New	kirk Farn	1	1693
	B. M. on rock.						
	Cattaraugus School	Hous	se cor.			• • • • • • • • • • • • • • • • • • •	1637
-521	Freeman well			Lock	wood Far	m	1614
	B. M. rock centre						
	Shelmandine's Cor	ners.				<i></i>	1603
	Roof well*					Colorad	0 1344
-523	Jenkins No.2 or Hil	ll No.	6	"	46	"	1350
	Roof,	No.	1	"	"	"	1333
525	Hill,	No.	2	66	"	"	1331
526	•		4		**	"	1329
527	"		5		"	"	1330
528	Dickson,					t Co. Farm "	1356
-529	Briar Hill,	No.	1	Hill	Tract,	"	1382
	" "	No.	2	66	66	"	1398

^{*}B. M. on hemlock stump.

							G. L 4	_	1000
531	Dickson, (new)			Hill Tr		•	Colorad		
532	Colorado Co.,	No.	12	44	"				1331
533	M Kinney,	No.	8	44	"		**		1333
534	Colorado,	No.		4.6	"		**		1341
535	Benson,	No.	1	**	"		"		1373
	Colorado*	No.	3	66	66		66	• • • •	
537	"	No.		4.6	46		"		1491
538	16	No.	9 (?)	44	44		16		
	Joy,	No.	4	Joy	"		"		1526
540	"	No.	5	"	66		"		1529
541	46	No.	11	66	"		"		1550
542	"	No.	7	4.6	46		44		1561
543	46	No.	9	66	**		"		1575
544	46		10	44	44		"		1597
545	46		14	66	44		46		1613
546	46		12	46	46		"		1605
547	14		13	44	66		64		1629
		No.		Rensor	1 Tract,		"		1621
	Magnolia,	No.			Tract, N.	E. of	66		1574
	Hutson,	No.		66	46		66		1565
	Ottman,	No.		66	44		44		1569
551	46	No.	3	44	66		44		1569·
552		No.	1	"	66		66		1569
	Horton,	No.		46	66		46		1564
	Wheelock,			46	44		41		1567
555	(44	"		46		1558
	Tuttle	No.	2		Farm.		•		1556
	M'Kelvey & Co.,	No.		46					
558						. , .			1519
	Peter Schmick,	No.		11 41110	16	. , .			
560	" "	No.			ina's Ta	ase			1603
	Cummings,	No.		Cumm	ott a gut.				1606
562		No.				?)			1608
	Buckhorn,	No.		11.41110	raim (• • • • • • • • • • • • • • • • • • • •			1605
564	44	No.		44	"				
505	4.6	No.		44	66	••••••			
566	"	No.	4			nter Trac			
	Hunter,	No.		36000	gs & II u	: 161 TIAC			
568	Morse & Hunter,	No.				il Co			1515
569	Hague & Cummings	, NO.	7	New T	онаон О. 46				
570	44 44	No.		"	"		• • • • • • •		
571	Cushing & Grandin	No.	6		"		•••••		
572	Hague & Manwarri	ng		"					
573	Cushing & Grandin,	No.		"			•••••		
574	66 66	No.	8	"	44		• • • • • • •		
575	Wm. Hague,	No.		44	44				
576	Cushing & Grandin,	No.	2	"	44		•••••		
	Hague,	No.	9	**	44		•••••		
578	ű		10	66	"				
579	44	No.	8	"	"	"		• • • • •	1029

^{*}One of the wells making connection between the different systems of. exploration.

		. 37		37 7		o., ,	~ -			1000
580 Hague		No.	_							
581 Capt.		No.	8	46	"	44	• • • • •		• • • • • •	
582 "	66	No.	4	"	"	11				
583 "	"	No.	6	"	44	"	• • • • •	• • • • •		. 1638
584 "	"	No.	2, (ab	andon	ed,) N	ew L	ondon	Oil	Co	. 1645
585 Clapp	,	No.	23	E.E.	Clapp:	Farm				. 1652
586 "		No.	24	44	46	"				. 1647
587 "		No.	43	"	"	44				. 1648
588 "		No.	10	66	66	66				. 1626
589 "		No.	9	46	44	44				. 1603
590 "		No.	1	66	45	٠,			• • • • • • •	
591 "		No.	3	44	46					
592 "			50	44	"	"				
002			53	"	44	"				
093					66	66			• • • • • • • • • • • • • • • • • • •	
OUT			51	44	"	"				
000			52		46	"			• • • • • • •	
596 "			16						• • • • • • •	
597 "			33	44	46	"			• • • • • • •	
598 "			34	"	46	"			• • • • • • •	
599 "		No.	35	"	"	"	• • • • • •	• • • • •	• • • • • • •	. 1744
600 "			36	46	4.6	"			. 	
601 2d we	II E. of Lock	hart's	house,	Jason	(J. Cl	app)	Farm,	N. 0	of road.	. 1729
602 " "	46 66		66	66		11	44	s.	".	. 1726
603 3d "	"			46		46	"	"	",	. 1723
604 4th "	66 66		46	44		66	4.6	64	и.	. 1720
605 3d "	66 66		"	46		"	"	N	"	. 1724
000 00										
606 Grand	in No. 4			Triun	inh O	il Co				
	in, No. 4			Triun	ıph O					. 1727
607 Shaw									· · · · · · · · · · · · · · · · · · ·	. 1727
607 Shaw.	well of Radi	 ire, W	atson				• • • • • •		• • • • • • • •	. 1727 . 1693
607 Shaw. 608 O. K. & Co	well of Radu	ire, W	atson	"			· · · · · · · ·		• • • • • • • •	. 1727 . 1693 . 1677
607 Shaw. 608 O. K. & Co 609 Merric	well of Radi	ire, W	atson	"				••••	•••••	. 1727 . 1693 . 1677 . 1651
607 Shaw. 608 O. K. & Co 609 Merric 610 Robbi	well of Radu k	ire, W	atson	" " "					· · · · · · · · · · · · · · · · · · ·	. 1727 . 1693 . 1677 . 1651 . 1647
607 Shaw. 608 O. K. & Co 609 Merric 610 Robbi 611 Radur	well of Radu ck nse, W. & Co.,	ire, W	atson	66 66 66	 	:			· · · · · · · · · · · · · · · · · · ·	. 1727 . 1693 . 1677 . 1651 . 1647 . 1664
607 Shaw. 608 O. K. & Co 609 Merric 610 Robbi 611 Radur 612 "	well of Radu ck	No. 2	atson	66 86 66 66	 	:			••••••	. 1727 . 1693 . 1677 . 1651 . 1647 . 1664 . 1664
607 Shaw. 608 O. K. & Co 609 Merric 610 Robbi 611 Radur 612 " 613 "	well of Radu	No. 2 No. 4	atson	66 66 66 66 66	44 44 44 44 44 44 44	c			••••••	. 1727 . 1693 . 1677 . 1651 . 1647 . 1664 . 1664
607 Shaw 608 O. K. & Co 609 Merric 610 Robbi 611 Radur 612 " 613 " 614 D. W.	well of Radu ck ns e, W. & Co., """ Clark, lease	No. 5 No. 2 No. 4	atson	66 66 66 66 66	11 11 11 11 11 11					. 1727 . 1693 . 1677 . 1651 . 1647 . 1664 . 1664 . 1670
607 Shaw 608 O. K. & Co 609 Merric 610 Robbi 611 Radur 612 " 613 " 614 D. W.	well of Radu	No. 5 No. 2 No. 4	atson	66 66 66 66 66 66 66	 					. 1727 . 1693 . 1677 . 1651 . 1647 . 1664 . 1670 . 1678 . 1677
607 Shaw 608 O. K. & Co 609 Merric 610 Robbi 611 Radur 612 " 613 " 614 D. W. 615 R., W	well of Radu ck ns e, W. & Co., """ Clark, lease	No. 5 No. 2 No. 4	atson	" " " " " " " " " " " " " " " Rams	u u u u u u u u u u u u u u u u u u u	: : : : : :	s corne	er, T	riumph	. 1727 . 1693 . 1677 . 1651 . 1647 . 1664 . 1664 . 1670 . 1678 . 1677 , 1689
607 Shaw 608 O. K. & Co 609 Merric 610 Robbi 611 Radur 612 " 613 " 614 D. W. 615 R., W	well of Radu ck ns e, W. & Co., " " Clark, lease . & Co., No.	No. 5 No. 2 No. 4 126	atson	" " " " " " " " " " " " " " " Rams	u u u u u u u u u u u u u u u u u u u	: : : : : :	s corne	er, T		. 1727 . 1693 . 1677 . 1651 . 1647 . 1664 . 1664 . 1670 . 1678 . 1677 , 1689
607 Shaw 608 O. K. & Co 609 Merric 610 Robbi 611 Radur 613 " 614 D. W. 615 R., W B. M Crov	well of Radu ce, W. & Co., """ Clark, lease & Co., No. f. on stump. wn of hill ne	No. 5 No. 2 No. 4 126	atson	" " " " " " " " " " " " " " " " " " "	and	cccccccccccccccccccccccccccccccccccccc	s corne	er, T	riumph	. 1727 . 1693 . 1677 . 1651 . 1647 . 1664 . 1664 . 1670 . 1678 . 1677 , 1689 . 1689
607 Shaw 608 O. K. & Co 609 Merric 610 Robbi 611 Radur 612 " 613 " 614 D. W. 615 R., W B. M Crov 616 Sprou	well of Radu ck e, W. & Co., """ Clark, lease & Co., No. 3 f. on stump. wn of hill ne l, lease 207	No. 5 No. 2 No. 4 126	fatson	" " " " " " " " " " " " " " " " " " "	and	c c c c c c c c c c c c c c c c c c c	s corne t, Triu	er, T	riumpb	. 1727 . 1693 . 1677 . 1651 . 1647 . 1664 . 1664 . 1670 . 1678 . 1677 , 1689 . 1689
607 Shaw 608 O. K. & Co 609 Merric 610 Robbi 611 Radur 612 " 613 " 614 D. W. 615 R., W Crov 616 Sprou 617 R., W	well of Radu ce, W. & Co., """ Clark, lease & Co., No. 1 f. on stump. wn of hill ne l, lease 207. & Co.—"Dr	No. 5 No. 2 No. 4 126	fatson	" " " " " " " " " " " Rams On the	"" "" ey & B e main	aker'	s corne	er, T	riumpb	. 1727 . 1693 . 1677 . 1651 . 1647 . 1664 . 1664 . 1670 . 1678 . 1677 , 1689 . 1689 . 1671
607 Shaw 608 O. K. & Co 609 Merric 610 Robbi 611 Radur 612 " 613 " 614 D. W. 615 R., W Crov 616 Sprou 617 R., W 618 Collin	well of Radu ck ns "" Clark, lease & Co., No. 3 f. on stump wn of hill ne l, lease 207. & Co.—"Dr s No. 2, lease	No. 5 No. 2 No. 4 126 ar by	atson	Rams On the	ey & Be main	a control control	s corne	er, T	riumph	. 1727 . 1693 . 1677 . 1651 . 1647 . 1664 . 1676 . 1678 . 1677 , 1689 . 1671 . 1672 . 1652
607 Shaw 608 O. K. & Co 609 Merric 610 Robbi 611 Radur 612 " 614 D. W. 615 R., W B. M Crov 616 Sprou 617 R., W 618 Collin 619 "	well of Radu ck ns "" Clark, lease & Co., No. 3 f. on stump wn of hill ne l, lease 207 & Co.—"Dr s No. 2, lease "Turkey,"	No. 5 No. 2 No. 4 126 ar by 236 lease 2	atson well"	Rams On the	ey & Be main	a control cont	s corne	er, T	riumpb	. 1727 . 1693 . 1677 . 1651 . 1647 . 1664 . 1670 . 1678 . 1677 , 1689 . 1671 . 1672 . 1652 . 1646
607 Shaw 608 O. K. & Co 609 Merric 610 Robbi 611 Radur 612 " 614 D. W. 615 R., W B. M. Cro 616 Sprou 617 R., W 618 Collin 619 "	well of Radu ck	No. 5 No. 2 No. 4 126 ar by Day 236	ratson well"	Rams On the	ey & Be main	a control cont	s corne	er, Timph	riumpb	. 1727 . 1693 . 1677 . 1651 . 1647 . 1664 . 1670 . 1678 . 1677 , 1689 . 1671 . 1672 . 1652 . 1646 . 1600
607 Shaw 608 O. K. & Co 609 Merric 610 Robbi 611 Radur 612 " 613 " 614 D. W. 615 R., W B. M. Crov 616 Sprou 617 R., W 618 Collin 619 " 620 Gillen 621 "	well of Radu ck	No. 5 No. 2 No. 4 126 ar by 236 leaso 2	well"	" " " " " " " " Rams On the	ey & Be main on the main of th	aker' stree	s corne t, Triu ipany.	Co	riumpb	. 1727 . 1693 . 1677 . 1651 . 1647 . 1664 . 1670 . 1678 . 1677 , 1689 . 1671 . 1672 . 1652 . 1646 . 1600 . 1577
607 Shaw 608 O. K. & Co 609 Merric 610 Robbi 611 Radur 612 " 613 " 614 D. W. 615 R., W B. M. Crov 616 Sprou 617 R., W 618 Collin 619 " 620 Gillen 621 " 622 "	well of Radu ck	No. 5 No. 2 No. 4 1263 ar by 236leaso 2	atson well"	" " " " " " " " " " Rams On the Trium " " " " " Denni	ey & Be e main in in in in in in in in in	& N.	s corne t, Triu npany.	Co	riumph	. 1727 . 1693 . 1677 . 1651 . 1647 . 1664 . 1670 . 1678 . 1677 , 1689 . 1671 . 1672 . 1652 . 1646 . 1600 . 1577
607 Shaw 608 O. K. & Co 609 Merric 610 Robbi 611 Radur 612 " 613 " 614 D. W. 615 R., W B. M. Crow 616 Sprou 617 R., W 618 Collin 619 " 620 Gillen 621 " 622 " 623 Denni	well of Radu ck	No. 5 No. 2 No. 4 1263 ar by 2361ease 2	well"	"" "" "" "" "" "" "" "" "" "" "" "" ""	ey & B e main inph Oi ''' is Run	aker' stree 1 Corr	s corne t, Triu ipany.	Co	riumph	. 1727 . 1693 . 1677 . 1651 . 1647 . 1664 . 1664 . 1670 . 1678 . 1677 , 1689 . 1671 . 1672 . 1652 . 1646 . 1600 . 1577 . 1576
607 Shaw 608 O. K. & Co 609 Merric 610 Robbi 611 Radur 613 " 614 D. W. 615 R., W Crov 616 Sprou 617 R., W 618 Collin 619 " 620 Gillen 621 " 622 " 623 Denni 624 Wm.	well of Radu ce, W. & Co., """ Clark, lease & Co., No. 3 f. on stump. wn of hill ne l, lease 207 & Co.—"Dr s No. 2, lease "Turkey," , No. 17 No. 8 No. 7 s Run, No. 2 Andrews (al	No. 5 No. 2 No. 4 1263 ar by 236lease 2	well"	Ramson the Trium	ey & B e main mph Oi """ is Run ""	a can can can can can can can can can ca	s corne t, Triu ipany.	Co.	riumph	. 1727 . 1693 . 1677 . 1651 . 1647 . 1664 . 1664 . 1678 . 1677 , 1689 . 1671 . 1672 . 1652 . 1646 . 1600 . 1577 . 1576 . 1547
607 Shaw 608 O. K. & Co 609 Merrit 610 Robbi 611 Radur 613 " 614 D. W. 615 R., W Crov 616 Sprou 617 R., W 618 Collin 619 " 620 Gillen 621 " 622 " 623 Denni 624 Wm. 625 "	well of Radu ce, W. & Co., """ Clark, lease & Co., No. 3 f. on stump. wn of hill ne l, lease 207 & Co.—"Dr s No. 2, lease "Turkey," , No. 17 No. 8 S Run, No. 2 Andrews (al	No. 5 No. 2 No. 4 1263 ar by 236lease 2	well"	Rams On the Trium	ey & B e main mph Oi """ is Run """	a can can can can can can can can can ca	s corne	Co.	riumph	. 1727 . 1693 . 1677 . 1651 . 1647 . 1664 . 1676 . 1677 , 1689 . 1671 . 1672 . 1652 . 1646 . 1600 . 1577 . 1576 . 1547 . 1500
607 Shaw 608 O. K. & Co 609 Merric 610 Robbi 611 Radur 612 " 614 D. W. 615 Sprou 617 R., W 618 Collin 619 " 620 Gillen 621 " 622 Ur 623 Denni 624 Wm. 625 " 626 Red R	well of Radu ck e, W. & Co., """ Clark, lease & Co., No.; f. on stump. wn of hill ne l, lease 207 & Co.—"Dr s No. 2, lease "Turkey," , No. 17 No. 8 No. 7 s Run, No. 2 Andrews (al	No. 5 No. 2 No. 4 126 ar by 236 lease 5	well"	"" "" "" "" "" "" "" "" "" "" "" "" ""	ey & Be main aph Oi	& N.	s come t, Triu ppany.	CCo	riumph	. 1727 . 1693 . 1677 . 1651 . 1647 . 1664 . 1676 . 1678 . 1677 , 1689 . 1671 . 1672 . 1652 . 1646 . 1600 . 1577 . 1576 . 1547 . 1576 . 1547 . 1599
607 Shaw 608 O. K. & Co 609 Merric 610 Robbi 611 Radur 612 " 613 " 614 D. W. 615 R., W 616 Sprou 617 R., W 618 Collin 619 " 620 Gillen 621 " 622 U. 623 Denni 624 Wm. 625 " 626 Red R 627 Gen. I	well of Radu ce, W. & Co., """ Clark, lease & Co., No. 3 f. on stump. wn of hill ne l, lease 207 & Co.—"Dr s No. 2, lease "Turkey," , No. 17 No. 8 S Run, No. 2 Andrews (al	No. 5 No. 2 No. 4 126 3 Day 236 lease 5 oandor "	well"	"" "" "" "" "" "" "" "" "" "" "" "" ""	ey & Be main aph Oi	& N.	s come t, Triu ppany.	Co.	riumph	. 1727 . 1693 . 1677 . 1651 . 1647 . 1664 . 1676 . 1678 . 1677 , 1689 . 1671 . 1672 . 1652 . 1646 . 1607 . 1576 . 1547 . 1576 . 1599 . 1352

'629	Porter		N. Y. &	Allegheny	Trac	t	1311
t630	Clark, N	I. Y. & A., No. 3	"	"	66		1299
631	Keyston	6	Tidioute	& Warren	Trac		1238
		te	46		"		1232
633	Pilgrim.	lease 33	44	"	"		1201
		lease 33	66	66	44		1196
		lease 35	44	4.4	"		1191
	•	lease 42	4.4	4.6	66		1177
	•	lease 46	66	44	"		1171
	Top of	rail	Bridge or	er Gordon	Run		1114
	Surfac	e of water, Aug. 20, '74,	June. Go	rdon Run &	Alle	gheny river.	1095
	Top of	rail	Opp. Tidi	ioute Depot			1113

LINE D.

From Pleasantville to Rouseville.

This line was run in 1874 from Ennis hill along the oil development to East Shamburg; thence over the Plumer or "Yankee Ridge road" to the Keech farm school house; thence over the Franklin and Warren pike to the upper end of the Humboldt Refinery enclosure; and thence down the valley of Cherry run to Oil creek.

688	Harsh, E	Harsh	Tract.	Pleasantville	a. 	1700
639		44	"	"		1691
640		66	44	44		1702
611	Fisher, No. 3	Hebert	Tract,	Pleasantvill	e	1649
642	·	44		46		
643	Marlin, No. 2			"		
644	M'Caslin (1874)			Pleasantville		
645	Benedict Gas Well	4.6		11	• • • • • • • • • • • • • • • • • • • •	1656
646	Tabor & Thompson (green oil)			"		
-647	Haskell			ght, 10 acres.		
648	Main & Oles (Fisher D.)			Farm		
649	Rice, now Wesley			arm		
	Jim Hart				• • • • • • • • • • • •	
	Armstrong (drilling 1874)				• • • • • • • • • • •	
652	Mountain	44				
653	Harmonial, 9				••••••	
	Mountain, 4	66				1626
	Smithman	- "			• • • • • • • • • •	
	Newbury					1596
657	"	- "				1557
	Bronson (Phoenix) No. 6	Bates I	etrole:	um Company	· · · · · · · · · · · · · · · · · · ·	1548
659	" D				********	
€60	Bates (ab'd), No. 2	44	**	••	• • • • • • • • • •	1546

661	Scott, No. 11			Hebert	Reserv	ve			. 1538
662	" (best)				"				. 1538
663	Collins & Perry,	No. 1	• • • • • • •	Mill Fa	rm				. 1525
664			· · · · · · · ·						
665	"	No. 5	i	66 6				•••••	
666				"					
667	Galloway, le	ase 6		Indepen					
				"		"	"		. 1617
			•••••	44		"	"	• • • •	. 1624
			· · · · · · · · · · · · · · · · · · ·	**		"	44	• • •	. 1624
			(?)	46		"	46		. 1628
	B. F. Brown, Old		•••••	46		"	"	• • •	. 1630
			· · · · · · · ·	44		"	"		. 1607
	•			Old Wa	lter Sc	ott Oil	Compa		
675	- •			46	66	"	"		. 1647
676			••••	4.6	44	46	66		. 1647
677				"	"	6.6	"		. 1642
				C. Clark	Farm				
679				"	66				
680			•••••	66	46				
681			• • • • • • •	"	46				
682	"			A Clar	k Farm				
	Croutz & Roy, No			"	"				
	Clark			46	66			· • • • • • • • • • • • • • • • • • • •	
	Avery Well			"	4.6				
686	•			"	"				
	Pole Tool Well			Brumm	agen F				
001	Old Pithole Pl'k			"Wogge					
688	Lavinus								
	Petty, Lease 3			Clark F					
	B. M. on rock 40								
690	Keech Farm Wel		-	"	"				
691	Bogue Farm Wel	i. left.		Near K	ech Fa				
	B. M. on rock, r								
	Opposite old ho								
	Opposite old log								
	Intersection of								
	"			To Pith					
	Old RR. crossin	g							
	Brook by large	oaks.		Hillside	N. E.	of Pra	thers.		. 1423
	Road up Cherry								
	Bridge over Ch	erry r	ın	N. E. o	f Plum	er			. 1299
692	Prather Farm We	ell, 186	35	At this	crossin	g	• • • • • • •		. 1299
	B. M. on 2d cou	rse of	stone.	S. W. c	orner c	of Plun	ier P. C). <i>.</i>	. 1317
	Bridge over Ch	erry r	un	S. W. c	nd of I	Plumer		• • • • • • •	. 1264
	B. M. rock unde	erman	le, left,	N. E. o	f Hum	bolt Re	finery		. 1300
	RR. bridge over	Cher	ry run.	Near S.	W. cor	of Refi	nery er	closure	, 1216
693	Sulphur Well on	Flats.		Cherry	Run P	etroler	m Čo.		. 1195
694		44		٠,	6			• • • • • • •	
	Top of RR. trac	k	• • • • • •	Opp. Co	rnen &	Beer's	office.		. 1112
695	Baker Well			Rynd F	arm				. 1098
	Sulphur Well				"				. 1097

86 I.I. OIL WELL RECORDS. J. F. CARLL, 1877.

697 Abandoned (Reed, No. 2?) Ry:	nd Farm 1102
698 Old Reed Well "	***************************************
699 Keystone, G. Whitman "	" 1105
700 Brevort, No. 6 Bre	vort Petroleum Co 1094
701 " No. 3	'
702 " No. 30	· · · · · · · · · · · · · · · · · · ·
703 " No. 22 "	' '' … 1097
704 " No. 29 "	' " … 1098
705 Union Co. Well (ab'd) Uni	on Petroleum Co
	chanan Farm, near N. line 1072
	' '' 1063
	" " 1062
708 " " No	
709 Gillott	' ''
	' ' 1052
719 M/Mann	
713 Long & Gibson	
713 Long & Gibson, or 714 Patten (?)	***************************************
714 Patter (?)	·
715 Willoughby	' ''
715 Willoughby Double rig. \ 716 " Double rig. \ 716 "	' "
.20	seville 1036
717 Grant Well Sou	
718 Allen Wright, No. 17	
719 Point Well Nea	
	ction Oil Creek and Cherry Run. 1020
Burrace of water, Bep. 10 1074, July	onon on creek and cherry mun. 1020

CHAPTER IV

First Selection of J. F. Carll's Warren and Venango Oil Well Record in 1876.*

The scientific value of well records is limited by many conditions, each of which should be separately considered. But there can be no question of the utility of preserving them from destruction by publishing them in the printed archives of a State Geological Survey. Their publication will answer many questions put by men of science abroad and at home; will place at the service of investigators the original data of our own calculations; will invite the intelligence of thoughtful men in the Oil Region to a more careful scrutiny of such data; and above all, will induce many well borers to be more precise and complete in making up future records, and perhaps to communicate them for comparison. In this way only will it be possible to arrive at broad and true answers to moot questions which no one has yet succeeded in satisfactorily answering, except in a very local and unconnected manner.

Technical names and terms ought to be explained to those who have no business at the wells, but such a glossary would be a long one.

The height of each well mouth above the fixed ocean level datum of the Coast Survey should always be given; but it is often wanting, and then the value of the well record becomes comparatively low.

The well records of one locality have been grouped together; but it must be understood that not one in ten of all the paying and non-paying wells which have been sunk has been obtained, and the whole list is therefore but a recorded selection.

^{*}This Chapter was published separately in the Proceedings of the American Philosophical Society, Philadelphia, December 15, 1876, and copies were distributed among persons in the Oil Region to obtain their concurrence.

The first groups have been obtained from Companies operating in Warren and Venango counties; others will be added from Clarion and Butler counties from similar collections made in those counties, to show the geological persistency of the Oil-Sand Group from Tidioute to Butler.

The figures in the final column of each well record represent the height above ocean level in Raritan Bay, New York Harbor, of well mouth, top of 1st sand, &c. &c., as corrected by surveys, May, 1877, after the determination of Oil City Union. Depot RR. grade as=1008'.

GROUP 1.

COLORADO DISTRICT.

720. Colorado Well, No. 1. August 12, 1870.

Located in Warren county, South-west township, Pa., one Pine creek, or East Oil creek, between Pleasantville and Tidioute, and 2 miles north-east of Enterprise.

Level of well mouth above ocean level in feet*					
Casing to rock	36	to	36	=	1337
Interval of measures unnamed		* *	270	=	1103
First Sand (1st SS.)	57	"	327	=	1046
Interval unnamed	88	"	415	==	958
Second Sand (2d SS.)	24	ш	439	==	934
Interval unnamed	81	"	520	=	858
Third Sand (3d SS.)	46	"	566	==	807
Well carried down in "pocket"	9	44	575	==	798

Size of hole, $5\frac{1}{2}$ "; drilled wet; cased with $3\frac{1}{4}$ " casing to shut off the water. Seed bag on casing below 2d SS., say at about 445'.

A "mud vein" 8' below top of 3d SS., at 528'.

The oil sand was of uniform color [white and pebbly] with the softest stratum on top, and appearances indicate that nearly if not quite all the oil comes in the well at 5' or 6' below the top of the 3d sand, between which points both torpedoes were exploded.

^{*}In the first edition Proc. A. P. S., Dec. 15, 1876, the Oil City datum not yet being established, this level of 1873' was printed 1367', and all the other figures in that edition are also 6' too low

This well was pumped about thirty days, part of the time with a gas pump attached and part of the time without one.* The largest natural production without the gas pump was 4 barrels per day. The first day after the gas pump was applied the production increased to 6 barrels, from which point it gradually declined to less than 4 barrels.

On the 21st of November, 1870, it was torpedoed at a point $5\frac{1}{2}$ feet below the top of the 3d SS. It then produced 160 barrels per day for the first few days, but gradually declined to 13 barrels per day by the 1st of June, in the following year, 1871. The gas pump was again tried with no satisfactory results, and taken off as worthless or of no benefit to the well.

On December 21, 1871, the production had declined to 1 barrels. A one-quart nitro-glycerine torpedo was then exploded in the oil sand, which increased the production to 40 barrels per day. But this continued only a day or two. It immediately commenced decreasing, and on the 1st of August, 1872, about two years from the time it was first pumped, it had declined to its first natural production of 4 barrels per day.

During this month, August, 1872, the "volcanic treatment" was tried upon the well at three different times. The first time 4 burners were used, resulting in a slight increase of gas, but no increase of oil.†

The second time 7 burners were used, same results.

The third time 9 burners were used, same results, leaving the well at the end of the treatment with an appreciable increase of gas, but no improvement in the supply of oil.

^{*}Every well has more or less gas, which, separating from the oil at the bottom of the well, rises between the tubing and casing and escapes through a pipe provided for the purpose, at the well mouth. A "gas pump" is an instrument which is attached to this escape pipe to relieve the rising gas from atmospheric pressure, and thus facilitate and increase its flow. In many cases it not only augments the flow of gas but very materially improves the oil production of the well. A "Rotary" or "Gas Blower" is sometimes used for the same purpose.

[†]The "volcanic burner" is a patented article designed to increase the production of a well by intensely heating the fluid at the bottom. It consists of a case filled with chemical ingredients. After lowering it to the desired spot the materials are ignited by an electric spark. The operation is repeated until the desired heat has been obtained, when the tubing is at once put in and pumping resumed.

A "scratcher" was also used in this well once, but with no benefit.*

By a series of experiments in casing and pumping, the salt water is supposed to come into the well with the oil near the top of the 3d SS.

721. Colorado Well, No. 2.

Located on Colorado Oil tract, 15 rods south of No. 1, and at the same altitude.

Dry cased hole. Salt water in second sand. Cased below second sand. Produced no oil and only about a quarter of a barrel of salt water per day.

Sand rocks about the same thickness as in well No. 1, but the third sand was of inferior quality, very little of it being white.

722. Colorado Well, No. 3. August 20, 1870.

Located 13 rods, N. 78° E., from No. 1.

Level of well mouth above ocean level in feet.					1410
Casing to rock	34	to	34	=	1376
? (Interval unknown)	279	44	313		1097
1st SS. (First Sandstone)	44	44	357	=	1053
?	97	+4	454	=	956
2d SS	21	"	475	=	935
?	84	66	559	=	851
.3d SS	45	"	604	=	806
? pocket,	8	"	612	=	798

Mud vein in 3d SS. at 566 feet.

Cased at 475 feet.

3d SS. $\begin{cases} \text{top } 6' \text{ gray, with but little white.} \\ \text{next } 2' \text{ white and soft (good).} \\ \text{next } 20' \text{ white, but close.} \\ \text{bottom } 17' \text{ mixed gray and white.} \end{cases}$

When first pumped it yielded only one barrel of oil per day and continued thus until a "scratcher" was used, which brought the production up to 15 barrels for a few days. It then declined

^{*}A "scratcher" is a round brush, about three feet long, made of steel wire. When it is to be used the tubing is drawn from the well, a few barrels of benzine are poured in and the scratcher is attached to the sucker rods and run down to the oil rock, where it is worked up and down for some time to scratch or scrub the walls of the well and assist the benzine in the dislodgment of whatever may have accumulated there.

to 4 barrels, when a 3 pint nitro-glycerine torpedo was inserted 6 feet from the top of the third SS. After this it produced 100 barrels per day for a short time.

The use of benzine in this well gave no satisfactory results, probably on account of salt water.

Three-pint torpedo exploded 8 feet below top of 3d sand, May 30, 1872. Daily production increased to 10 barrels, but declined to 5 barrels in ten days. Torpedoed again, Dec. 18, 1872. Result not stated.

723. Colorado Well, No. 4.

August 20, 1872. (?)

Located $5\frac{1}{2}$ rods south-east of M'Kinney's north-east corner.							
'Level of well mouth 26' feet lower than No. 1,					1347		
Drive pipe to rock	31	to	31	=	1316		
? (Interval unknown)	205	"	236	=	1111		
1st SS. (First Sandstone)	45	"	281	==	1066		
?	109	"	3 90		957		
2d SS	21	"	411	=	936		
?	84	"	495	=	852		
3d SS	43	"	538	=	809		
? pocket,	6	"	544	_	803		
Drillod dry Coard at 419/							

Drilled dry. Cased at 412'.

Best natural production, 2 barrels per day.

The hole was dry when the 3d sand was struck, and remained so until the drill had penetrated the 3d sand $5\frac{1}{2}$ feet. At this point oil and salt water came in. The best part of the sand was from 505 feet to 515 feet; below this the sand was poor. The first torpedo was exploded 5 feet below top of rock.

The production was increased by the first torpedo, but soon settled back to about 5 barrels per day. The same effect followed the second and third. The fourth was a one-quart nitro-glycerine blast, but it made very little increase in the oil flow. Benzining, flooding the sandrock with oil, and "scratching" the walls, all failed to produce beneficial results.*

^{*}A well is "flooded" by pouring sufficient fluid in at the top, while the pump remains idle, to fill up the shaft several hundred feet, more or less, above the oil sand. Benzine and crude oil are both used for this purpose; the object being to saturate the rock, under pressure, in order that the paraffin or other accumulations which may have adhered to its surface or obstructed its pores may be loosened and removed with the fluid when the pump is again started.

724. Colorado Well, No. 5.

Struck about August, 1871.

Located 14 rods south of No. 4.

Level of well mouth above ocean level, No. 1+31'=					1404
Drive pipe to rock	70	to	70	=	1334
1st and 2d sands and intervening measures					
"regular" to top of 3d SS	423	"	493	==	911
3d SS	43	"	536	==	868
? pocket,	7	66	543	==	861

Wet hole. Cased at 217'. Crevice in 3d sand 11' below the top.

Natural production, 60 barrels per day at commencement, but declined quite rapidly to 15 barrels. Remained thus for some time until torpedoed, when it declined to 10 barrels.

First torpedo exploded 5 feet below top of 3d SS.

```
Second " " 11 " " "
Third " " 5 " " "
Fourth " " 26 " "
```

The production steadily declined; no beneficial results following the use of any of the torpedoes, except a slight temporary increase from the last.

The volcanic treatment was also tried without any marked effect.

The 3d sand was better than the average sands of other wells drilled in this neighborhood. The best and softest stratum commenced 3 feet below the top of the rock and continued to 7 feet. From 11 feet downward to the bottom of the rock the sand was good, but not as soft as in the upper division.

725. Colorado Well, No. 6.

August 16, 1871.

Level of well mouth above ocean				
Casing to rock	32	řeet	. 32	==
?	318	to	350	===
1st SS	40	66	390	
?	107	"	497	=
2d SS	19	"	516	==
?	81	"	597	==
3d SS	46	"	643	=
? pocket,	8	46	651	=

Wet hole. Cased at 516'.

Third sand very close and hard. Natural production, less than 1 barrel per day.

First torpedo exploded 7 feet below top of 3d SS. Production increased to 10 barrels, but soon declined to 5 barrels.

Second torpedo 6 feet lower. Increase to 10 barrels, but for shorter time than the first.

Scratched, with no benefit.

Third torpedo, May 8, 1872, 7 feet lower than the second. Slight increase in oil.

Fourth torpedo, July 13, 1872, 5 feet below top of 3d SS. and 2 feet above the point at which the first was exploded. Increased production, but did not pay for cost of torpedoing. Abandoned August 2, 1872.

726. Colorado Well, No. 7.

Struck August 8, 1871.

Level of well mouth above ocean				
Drive pipe to rock	75	ſeet	. 75	=
? (Interval unknown)	190	to	265	=
1st SS. (First Sandstone)	25	"	290	=
?	79	"	369	=
2d SS	15	"	384	=
?	86	"	470	=
3d SS	43	66	513	==
? pocket,	8	66	521	=

Wet hole. Cased at 386.

Mud vein 12 feet below top of 3d SS. Natural production, 7 barrels per day for a few days.

Third sand poor. From marks of oil on the tubing while the well was being pumped, it was inferred that the oil came in at a point in the sand rock just under the "mud vein," say from 12 to 15 feet below the top of the sand.

A three-pint nitro-glycerine torpedo was discharged at the point in the sandrock where the oil appeared to come in. The production rose at once to 40 barrels per day, but declined rapidly to 20 barrels, and then slowly to 17 barrels, at which figures it remained for more than three months, when it was flooded with water from well No. 10, then drilling within 15 rods of No. 7. When No. 10 was completed and tubed, and the water in it partially exhausted, this well, No. 7, began to recover its oil, but not in so large quantities as before it was

flooded. From the time No. 10 began to pump oil, in January, 1872, until July of the same year, No. 7 slowly declined in production, and at the latter date was pumping only 2 barrelsper day.

It was then torpedoed again at the same point as at first, after which it yielded, for a short time, 25 barrels per day and then declined rapidly to 4 barrels.

During the great "shut down movement of October, 1872," when all the walking beams in the oil regions were stopped for 30 days, this well lay idle. But on starting up again in November, it produced 40 barrels per day for three days. Seven days later it was producing 8 barrels, and at the end of one month had settled to its old production before the "shut down," say 4 barrels.

727. Colorado Well, No. 8.

Struck November, 1871.

Level of well mouth above ocean				
Casing to rock	10	feet.	10	=
? (Interval unknown)	268	to	278	==
1st SS. (First Sandstone)				
?	102	"	410	=
2d SS	20	"	430	=
?	85	44	515	=
3d SS	46	6.6	561	=
? pocket,	4	46	565	=

Drilled dry. The casing was first put in at 180 feet. Failing to shut off the fresh water, it was drawn and the large hole-continued down to 278 feet. At this point it was eased again, but both fresh water and salt water came in below as the drill went down, and the casing had to be drawn the second time. The well was then reamed down to the second sand, and 432 feet of casing put in, after which the hole remained perfectly dry until the oil sand was reached.

The upper 20 feet of the 3d SS. was good. The lower (26 feet) was finer, of a grayish color and intermixed with white pebbles. When the 3d SS. was struck, gas came in very freely and the hole quickly filled up many feet with oil and salt water.

Natural production, 1½ barrels per day.

Torpedoed November 21, 1871, with 2 quarts of nitro-glycerine. Exploded 6 feet below top of 3d SS. Result, 7 barrels per day. Declined rapidly.

Torpedoed December 15, 1871, with 3 pints of nitro-glycerine. Exploded at top of 3d SS. Result not satisfactory.

Torpedoed May 2, 1872, with 1 quart nitro-glycerine. Exploded 15 feet below top of 3d SS. Result, slight improvement.

Abandoned November 7, 1872.

728. Colorado Well, No. 9.

November, 1871.

Level of well mouth above ocean					1514
Conductor to rock	18	feet	. 18	=	1496
? (Interval unknown)	395	to	413	=	1101
1st SS. (First Sandstone)	28	66	441	=	1073
	119	66	560	==	954
2d SS	25	"	585	=	929
?	77	"	662	=	852
3d SS	48	66	710	=	804
? pocker,	6	"	716	=	798

Drilled dry. Cased at 417½ feet.

Sand generally good.

Natural production, about 3 barrels for a short time.

November 29, 1871. A 2 quart torpedo was used 11 feet below top of 3d SS. Result, 10 barrels per day at first, with rapid decline.

December 11. A 2 quart torpedo was exploded at 6 feet in the sand. Result not as satisfactory as from the first one. On May 21, 1872, the production had decreased to less than 2 barrels per day. A 3 pint torpedo was then put in 17 feet below the top of the sand. Production for the next 4 months, 4 barrels per day. After the "30 days' shut down" of October, 1872, it started to pump at less than 1 barrel per day, and with very little gas. This decline was attributed to the pumping of the wells on the adjoining tract after this one had been stopped.

November 26, 1872, it was treated with 6 volcanic burners, but with very slight improvement.

December 7, 1872, exploded a 3 pint torpedo 20 feet below the top of sand. Increase in oil very slight.

June 24, 1873. Production, half barrel per day.

729. Colorado Well, No. 10.

January 10, 1872.

• • • • •			
42:	feet	. 42	=
198	to	240	:
40	"	280	
89	"	369	=
14	"	383	
87	"	470	==
43	"	513	
9	"	522	=
	42: 198 40 89 14 87 43	42 feet 198 to 40 " 89 " 14 " 87 " 43 "	42 feet. 42 198 to 240 40 " 280 89 " 369 14 " 383 87 " 470 48 " 513 9 " 522

Wet hole. Cased at 274 feet, 3½ inch casing. 3d sand of ordinary quality.

Best part of it between 482 and 485 feet. This well when first pumped threw off a large quantity of fresh water, and then gradually changed to salt water. The first eight days of pumping the yield of oil did not exceed 3 barrels per day. On the tenth day it produced about 100 barrels of oil and an equal quantity of salt water. It continued to do the same with but very little variation for four months, after which it slowly declined to 60 barrels of oil and 60 barrels of salt water. It then declined rapidly to 28 barrels of oil and very little salt water. On the 27 of November, 1872, when the oil flow had declined to 23 barrels, the well was treated with 8 volcanic burners which increased the oil to 30 barrels per day, and also augmented the volume of water. After this, until about June 1. 1873, the production of oil fluctuated from 22 barrels to 36 barrels per day. It then suddenly declined to 12 barrels per day, with a very perceptible increase of salt water.

730. Colorado Well, No. 11.

January 20, 1872.

Level of well mouth above ocean				
Wooden conductor to rock	17	feet	: 17	
?	380	to	397	==
1st SS	30	66	427	==
9	117	66	544	=
2d SS	25	"	569	=
?	76	"	645	==
3d SS	46	"	691	=
? pocket,	81/2	"	6991	==
Drilled dry. Cased at 392½ feet.				

3d sand good in every part, particularly so between 662 feet and 670 feet.

Natural production, 190 barrels daily for five days. Decreased rapidly to 130 barrels, and then more gradually until September 11, 1872, when it was pumping only 8 barrels. At this time a 3 pint torpedo was put in 18 feet below the top of the 3d SS., resulting in a daily production of 150 barrels for 3 days. It declined rapidly. On September 21, it had fallen to 24 barrels per day, and on January 1, 1873, to 4 barrels per day. A 3 pint torpedo was then used 12 feet in the sand, and the yield was thus brought up to 15 barrels per day for a short time.

Then commenced another rapid decline carrying the production down to 3 barrels per day by the 6th of May following, when another torpedo was inserted, resulting in a slight increase of oil.

On June 24, 1873, while pumping 4 barrels per day, an attempt was made to fill up the well by putting oil and water in at the top. After 275 pails full had been poured in, it was ascertained that it had only filled up the bottom of the $5\frac{1}{2}$ inch well hole 25 feet.

731. Colorado Well, No. 12.

March, 1872.

Level of well mouth above ocean					1331
Drive pipe to rock	57	feet	. 57	=	1274
? (Interval unknown)	198	to	255	==	1076
1st SS. (First Sandstone)	40	"	295	==	1036
?	90	"	385	=	946
2d SS	12	44	397	=	934
9	87	"	484	122	847
3d SS	48	56	532	==	799
? pocket,	13	"	545	=	786

Drilled dry. Cased at 220 feet.

Best part of oil sand from 492 feet to 504 feet. Oil came in while running the second "bit" after the 3d sand was struck.*

^{*}A "bit" is the technical term applied to the chisel-shaped tool used in drilling before the "reamer" or finishing tool is introduced. It is seldom "run" more than three feet without being withdrawn for sharpening. Oil struck "while running the second bit" means, therefore, that it was from three to five feet below the top of the sand rock.

Natural production, 80 barrels per day, when first struck, declining slowly to 7 barrels by the 20th of August, 1872, when a 3 pint torpedo was put in 10 feet below the top of 3d sand. The result was an increase to 60 barrels the first 24. hours, and a rapid decline to 10 barrels in 30 days. For twoor three months after this it pumped steadily 10 barrels per day, and then began to decline. On May 24, 1873, it was yielding only 3 barrels per day. Another torpedo was now exploded at a point 14½ feet below the top of the 3d SS., bringing the production up to 30 barrels per day for two days, followed by a gradual decline to 10 barrels at the end of 30 days..

732. Colorado Well, No. 13.

July 20, 1872.

Level of well mouth above ocean				
Wooden conductor to rock	15 f	eet.	. 15	=
? (Interval unknown)	374	to	389	==
1st SS. (First Sandstone)	29	66	418	==-
?	73	66	491	=
2d SS	19	"	510	=
?	98	"	608	=
3d SS	38	6	646	===
Sand and slate alternating	8	66	654	==
Slate	4	66	658	==

Drilled dry. Cased at 205 feet.

Best sand from 3 to 8 feet below the top of 3d SS. Whiledrilling in this the well filled up rapidly.

Natural production, 3 barrels per day. July 26, explodéd a 3 pint torpedo 5 feet below top of 3d SS., causing but little improvement in production.

August 2, 1872, exploded another 3 pint torpedo one foot higher in the sand. Increase slight. Five days after torpedoing the well was producing 5 barrels.

733. Colorado Well, No. 14.

August 1, 1872.

Level of well mouth above ocean				
Wooden conductor to rock	15 f	eet.	15	=
?				
1st SS			410	
	106	"	516	=
2d SS			537	
?	85	44	622	==
3d SS	45	"	667	=
7 pocket,	8	1.6	675	==

Drilled dry. Cased at 275'.

Salt water and gas appeared in 2d SS. Third sand white and soft. Oil and salt water came in at a point 12 feet below its top. The best quality of sand was between 17 and 25 feet. Soft sand from 28 to 30 feet. Indications of a crevice between 38 and 40 feet.

Natural production, 2 barrels per day.

Aug. 10, 1872, torpedoed (3 pints) at 18 feet below top of sand. Production rose to 14 barrels per day, but declined in 10 days to 8 barrels. Then sank to 6 barrels. Pumped steadily 6 barrels per day for a long time, then slowly began to decline, and on the 26th of June, 1873, it was pumping less than 1 barrel per day.

734. Colorado Well, No. 15.
August 25, 1872.

Level of well mouth above ocean				• • •
Wooden conductor to rock	14 :	feet.	. 14	=
? (Interval unknown)	306	to	320	=
1st SS. (First Sandstone)	27	"	347	=
?	83	"	430	
2d SS	20	"	450	==
7	97	44	547	=
3d SS	$38\frac{1}{2}$	"	5851	=
? pocket,	$13\frac{1}{2}$		599	=

Drilled dry. Cased at 173'.

Considerable gas in 2d SS.

Softest part of 3d SS. commenced at $3\frac{1}{2}$ feet below its top, and continued down to 7 feet. At this point there was a large amount of gas, and the well filled rapidly with fluid, the larger portion of it being salt water. From 14 to 18 feet below the top of the sand, the composition of the rock was such as to warrant the expectation of a good well, but there was so much fluid in the hole at this time that it could not be positively ascertained whether oil came in at this point or not.

Natural production, 1½ barrels per day.

Aug. 29, 1872, torpedoed (3 pints) at 5 feet below top of 3d sand. Production first 24 hours thereafter, 12 barrels; and ten days later, 10 barrels per day.

Nov. 18, 1872, exploded a torpedo shell filled with giant powder, said to equal in strength a 3 pint nitro-glycerine tor-

pedo. Before torpedoing the well was pumping 5 barrels per day. Four days afterwards, it was producing 6 barrels per day. The explosion filled up the well hole 10 feet. [Meaning, no doubt, with the crushed and broken fragments of the sandrock.]

This well declined very slowly, and on June 24, 1873, was pumping 12 barrels per day.

735. Colorado Well, No. 16.

November 6, 1872.

Level of well mouth above ocean				
Wooden conductor to rock	14 :	feet	. 14	=
? (Interval unknown)	406	to	420	=
1st SS. (First Sandstone)	20	"	440	=
?	91	"	531	=
2d SS	19	"	550	=
?	107	"	657	=
3d SS	36	"	693	==
? pocket,	14	"	707	==
לדשום ב. ד. ווי מי				

Drilled dry. Cased at $257\frac{1}{2}$.

Very small quantity of gas and salt water in 2d SS.

Small quantity of salt water came in at the top of 3d SS. Oil came in from 7 to 10 feet below the top. Sand good down to 14 feet. Good again from 20 to 23 feet. Below 23 feet it was fine and hard, but white, until near the bottom.

Natural production, about 4 barrels of oil and 7 barrels of salt water per day.

Nov. 14, torpedoed (3 pints) 9 feet below top of 3d SS., it then produced 7 barrels of oil per day for about 10 days.

May 17, 1873, pumping $1\frac{1}{3}$ barrels per day. Torpedoed 20 feet below top of sand. Increased to 3 barrels per day for a short time.

June 24, 1873, pumping $1\frac{1}{2}$ barrels per day, and continued to do so until October, 17, 1873. Flooded with 7 barrels of benzine, but slight increase either in gas or oil.

Nov. 16, 1873, pumping 2 barrels per day.

736. Colorado Well, No. 17.

November 23, 1872.

Level of well mouth above ocean				
Wooden conductor to rock	13 :	řeet.	. 13	==
?	396	to	409	=
1st SS	21	"	430	===

?	101	to	531	==
2d SS	19	"	550	=
?	89	66	639	=
3d SS (not through SS.)	40	46	679	=

Drilled dry. Cased at 237'.

Oil came in in small quantities while running the first "bit" in the 3d SS. First show of salt water about 14 feet below top of sand. Sand soft and white down to 27 feet, then began to change to gray. From 31 feet to 40 feet it was very poor.

Natural production, 1½ barrels per day. Torpedoed December 3, 1872, (3 pints,) 14 feet below top of 3d SS., and 48 hours afterward it was producing at the rate of 10 barrels per day.

The well declined very slowly, and on the 26th of June, 1873, it was still producing 4 barrels per day.

737. Colorado Well, No. 18. January 25, 1873.

Level of well above ocean				
Wooden conductor to rock	15	feet.	. 15	===
Interval, containing 1st and 2d SS	578	to	593	=
3d SS. (Third Sandstone)	45	66	638	=
? (Interval unknown) pocket,	11	44	649	=

Drilled dry. Cased at 275 feet.

But little salt water and no oil came into the well until the drill had penetrated the 3d SS. about 14 feet; here both oil and salt water came in, filling up the hole 75 feet or more. The best and softest part of the 3d SS. was from 21 to 28 feet below the top of the rock.

Natural production, less than one-half a barrel per day.

Torpedoed February 26, 1873, (3 pints,) 14 feet below top of 3d SS. Production brought up to 2 barrels of oil and 10 or 12 barrels of salt water per day. Pumped about four weeks at this rate, then commenced to increase in oil and decrease in salt water, and in ten days was pumping 24 barrels of oil per day. Pumped at this rate for ten or twelve days, then gradually declined, and four months after torpedoing, was pumping 9 barrels daily.

738. Colorado Well, No. 19. February 19, 1875.

Level of well mouth above ocean				
Wooden conductor to rock	15	feet	. 15	=
Interval containing 1st and 2d SS	514	to	529	=
3d SS. (Third Sandstone)	42	"	571	=
? (Interval unknown)	9	<u>.</u> "	580½	=

Drilled dry. Cased at 181 feet.

3d SS. hard on top, but at the depth of 5 feet changed for the better, and some oil and salt water came in. Rock remained quite close until the drill had gone down 13 feet in the sand when it became softer, but still there was no perceptible increase of fluid in the hole. From 13 feet down to 22 feet the sand was rather soft, and remained good down to 33 feet, from which downward it gradually grew finer and harder.

Natural production, about $1\frac{1}{2}$ barrels of oil and 12 to 15 barrels of salt water per day.

February 22, 1876, torpedoed (3 pints) 14 feet below top of 3d SS. After torpedoing it commenced to pump at the rate of 15 barrels per day, and increased gradually, and on

March 1, it was pumping 30 barrels per day.

	,			0		_
"	20,	44	"	34	٤٤	"
April	1,		"	28	"	"
"	8,	44	"	30	"	"
May	10,	"	"	20	46	66

739. Colorado Well, No. 20 April 11, 1876.

Level of well mouth above ocean				
Drive pipe to rock	41	feet	. 41	=
Interval, containing 1st and 2d SS				
3d SS	44	"	540	=
? pocket,	10	"	550	=

Drilled dry. Cased at 159 feet.

Softest part of 3d SS. from 5 to 18 feet below the top. Oil began to come in with a very little salt water while drilling between 5 and 8 feet. Quite an increase of salt water at 24 feet. Gradual increase of gas all the way from 5 to 25 feet. Sand very hard at 39 feet, but good at the bottom of the rock.

Natural production, $2\frac{1}{2}$ barrels of oil, with about 8 barrels of salt water per day.

April 21, 1876, torpedoed (3 pints) $8\frac{1}{2}$ feet below top of 3d SS. Production during the first 24 hours thereafter, 7 barrels of oil, with not much increase of salt water and a small increase of gas.

May 10, 1876, pumping 6 barrels of oil per day.

740. Colorado Well, No. 21.

June 7, 1876.

Level of well mouth above ocean				
Wooden conductor to rock	10	feet.	. 10	==
Stove-pipe casing*	14	"	14	=
Interval, containing 1st and 2d SS	614	"	628	=
3d SS.(Third Sandstone)	41	6 6	669	==
? (Interval unknown) pocket,	10	66	679	=

Drilled dry. Cased at 249 feet.

The softest and best part of the 3d SS. commenced at 2 feet below its top and continued down to 8 feet. Here oil and gas and salt water came into the hole. The sand was quite soft until the rock had been penetrated 30 feet, after this it was very hard until quite near the bottom, where it was found to be soft and coarse.

Natural production, about 5 barrels of oil with 10 barrels of water during the first 24 hours. Three days later it was pumping 6 barrels of oil.

June 18, 1876, pumping about $5\frac{1}{2}$ barrels of oil.

June 20, 1876, torpedoed (3 pints) 6 feet below top of sand. Result, 15 barrels at first, gradually running down to 8½ by Nov. 25.

741. Magnolia, No. 1.

Struck June, 1872.

Located on Ware farm, Colorado district.

Level of well mouth above ocean					
?	438	to	438	==	
1st SS	30	"	468	==	

^{*}Sometimes the conductor is not properly driven to the rock. The drilling commences, and after going down some distance it is discovered that the loose material is falling in at its bottom. When the "cave" is not very serious a common, riveted, sheet iron "stove-pipe" cylinder is shoved down to prevent its enlargement. This casing is merely a supplement or lining to the conductor, and represents what should have been the length of the conductor had it properly been put in originally.

104 I.I. OHL WELL RECORDS. J. F. CARLL, 1877.

Ŷ	122	to	590	=	
2d SS	10	44	600	==	
•	82	"	682	=	
3d SS	43	44	725	==	
? pocket,	10	"	735	==	
Drilled dry. Cased at 286'.					
Show of oil at 688' and gas at 696'.					
3d SS. rather dark and close.					
Production, after one torpedo, about 2	barr	rela	er per	: da	۲,

Production, after one torpedo, about 2 barrels per day. Pumped at intervals until January, 1873.

742. Magnolia, No. 2.

Struck July 7, 1873.

Ware farm, Colorado district.

Level of well mouth above ocean					1621
7 a-inch easing to rock	61 f	eet.	61	==	1560
? (Interval unknown)	691	to	752	=	869
3d SS. (Third Sandstone)	42	"	794	=	827
Slate	1	"	795	=	826
Very hard shell	5	"	800	=	821
? pocket,	5	"	805	==	816

Drilled dry. Cased at 350'.

Best and softest part of 3d SS. from near the top down to-12 feet. Good sand all the way down to 30 feet. Oil came in while drilling, but could not tell at what point, on account of the accumulation of salt water in the hole, coming down from the 2d SS.

Natural production, between 3 and 4 barrels per day.

July 9, 1873, torpedoed (3 pints) 7 feet below top of 3d SS. Produced about 11 barrels the next 24 hours.

July 12, torpedoed (3 pints) 12 feet below top of rock. Nonnerease.

743. Chick Well, No. 1.

January, 1872.

Colorado district.

Level of well mouth above ocean				
?	598	to	598	=
2d SS	19	"	617	==
?	85	"	702	==
3d SS	34	"	736	===
? pocket,	25	"	761	=

"Measured by the drillers; probably incorrect."

Cased with 53" casing, but failed to shut off the water. Afterwards cased with 34" casing to depth of 450 feet.

3d SS. about 43 feet thick. Close and dark. Best part of it from 717 to 720 feet. Fair at 734 feet.

Natural production, less than 1 barrel per day.

Torpedoed at 705 feet and 717½ feet. Increased to about 3 barrels per day. The well was pumped by heads, and in January, 1873, produced about 2 barrels per day.

744. Chick Well, No. 2. November 15, 1873.

Colorado District.

Level of well mouth above ocean				
? (Interval unknown)	0	to	734	=
3d SS. (Third Sandstone)		"	779	=

Drilled dry. Cased at —.

Mud vein 5 feet below top of 3d SS. Sand soft at top. Very good between 12 feet and 20 feet. Salt water at 24 feet.

The well filled up with oil about 200 feet before the salt water vein was struck.

Natural production, about 10 barrels per day.

Dec. 3, 1873, torpedoed 13 feet below top of 3d SS. Production increased to 60 barrels per day. Declined gradually to 15 barrels by Feb. 15, 1874.

Torpedoed a second time, resulting in a slight increase of oil for a short time.

745. Chick Well, No. 3. February 13, 1873.

Colorado district.

Level of well mouth above ocean				
Wooden conductor to rock	20	feet	. 20	=
?	736	to	756	=
3d SS	52	"	808	=
? pocket,	14	"	822	=

Drilled dry. Cased at 378 feet.

Strong flow of gas and oil when 3d SS. was first struck, and the well filled up nearly 300 feet with oil.

Mud vein about 5 feet below top of 3d SS. Sandrock rather ordinary for the first 25 feet, below that point quite hard, and

at the bottom gray and dark. Softer than usual at 17 feet below the top. Salt water appeared between 25 and 30 feet below the top of sand.

Natural production, 75 barrels of oil and 100 barrels of salt water per day.

June 25, 1873, the production was 25 barrels per day.

746. Potter Well, No. 1. February, 3, 1873.

Colorado District.

Level of well mouth above ocean				
Wooden conductor to rock	25 fe	et.	25	=
? (Interval unknown)	6451	to	670½	==
3d SS. (Third Sandstone)	47	66	7174	=
? pocket,	121	"	730	=
Drilled dry. Cased at 266 feet.				

3d SS. good from top to bottom. Soft at 6 feet. Also from 12 to 15 feet, and extra quality at 42 feet. The lower part of the sand was softer than the upper, which is not generally the case in this locality.

The well filled up with fluid nearly 300 feet while drilling, but it was mostly composed of salt water.

Natural production, about 3 barrels of oil and 12 barrels of salt water per day.

February 5, torpedoed 12 feet below top of 3d SS. Bottom of hole filled up 1 foot with sand. Result, 12 barrels of oil and 50 barrels of salt water per day at first, declining to 6 barrels of oil in four days.

February 10, torpedoed 6 feet below top of sand. Well filled up with sand 4 feet. Production slightly increased for a short time.

March 12, treated the well with 10 volcanic burners. But slight improvement.

April 2, torpedoed 21 feet below top of sand. No benefit. April 21, 1873, abandoned the well.

747. Potter Well, No. 2.

February 11, 1872.

Colorado District.			
Well mouth above ocean			1556
Wooden conductor.	15 feet.	15 =	1541

?	663	to	678	=	878
3d SS	50	"	728	=	828
? pocket,		"	744	=	812

Drilled dry. Cased at 264 feet.

The 3d SS. was good all the way through. Uncommonly so, for the first 20 feet, at which depth there was a good show of oil and gas. Below 25 feet the sand was somewhat harder and finer.

Natural production, less than one barrel of oil and 8 or 9 barrels of salt water per day.

February 13, torpedoed 20 feet below top of 3d SS. The well filled up with sand 5 feet. Results, good. An increase both in oil and salt water. After several days' delay in getting the well to work, it pumped, when first started up, 16 barrels of oil and 100 barrels of salt water per day

March 18, treated it with 10 volcanics. Results, an increase of gas and slight increase of oil.

June 20, 1873, it was pumping 9 barrels of oil and 18 barrels of salt water.

748. Potter Well, No. 3. March 21, 1873.

Colorado District.

Well mouth above ocean					1555
Wooden conductor to rock	16	feet	. 16	=	1539
? (Interval unknown)	661	to	677	==	878
3d SS. (Third Sandstone)	50	"	727	=	828
? pocket,	8	"	735	=	820

Drilled dry. Cased at 270 feet.

The 3d SS. was good throughout its entire thickness, soft for the first 24 feet, then somewhat harder, but not very hard in any part.

Natural production, 2 barrels of oil and 6 or 8 barrels of salt water per day.

April 9, torpedoed, (3 pint shell,) production increased to 15 barrels of oil per day. Sustained the yield at this point for some time and then slowly declined to 8 barrels by the 20th of June following.

749. Potter Well, No. 4. March 21, 1873.

Colorado District.

Level of well mouth above ocean				• • •
Wooden conductor to rock	19	feet	. 19	==
? (Interval unknown)	637	to	656	
3d SS. (Third Sandstone)	47	6.6	703	_
?pocket,	10	Į 66	7131	_

Drilled dry. Cased at 255 feet.

3d SS. very uneven. Upper 13 feet soft; next 3 feet very hard; then 3 or 4 feet of soft sand. Below this finer and more even in composition.

Natural production, 1 barrel of oil and 15 or 20 barrels of salt water per day.

March 26, torpedoed (3 pint shell) 16 feet below top of 3d SS. Results, an increase to 4 or 5 barrels of oil and 100 barrels of salt water per day. Pumped in this way for some time and then gradually increased in oil until it produced 8 barrels per day. A decline then commenced both in oil and salt water. On June 24, 1873, it had settled back to 5 barrels of oil per day, and on August 6, to 3 barrels per day. At this time it was torpedoed again, and the next day was pumping at the rate of 8 barrels of oil per day.

On the 21st of August it had run down to 4 barrels per day, with a slight increase in the volume of gas. From this time it gradually declined to 1 barrel per day where it remained for two or three months.

Jan. 22, 1874, flooded sandrock with benzine, with no improvement either to oil or gas.

Jan. 28, put in one of Quick & Fertig's injectors.* After the first two injections the production rose to 2½ barrels, in-

[&]quot;The "injector" is a patented device by which perforations made in the tubing just above the pump chamber can be opened and closed at pleasure by the "sucker rods." Benzine is poured in at the top of the well and the pump kept in motion until the oil in the well and tubing is pumped out and benzine begins to show at the delivery pipe. The tubing is now full of benzine and the well is empty, or nearly so. On opening the apertures in the injector, the 500 or 1,000 feet of benzine in the tubing forces out strong jets in all directions against the walls of the well washing them down with force and giving more satisfactory results than can be obtained by a simple "flooding" with benzine. The process may be repeated again and again until the desired effect is produced.

creasing to 5 barrels by the end of one week from the time the injector was put in. Benzine was used in the injector; and a gradual increase in production occurred until on July 24, 1874, the well was pumping 17 barrels of oil per day.

750. Potter Well, No. 5. April 4, 1873.

Colorado district.

Level of well mouth above ocean				
Wooden conductor to rock	16 :	feet	. 16	=
? (Interval unknown)	655	to	671	=
3d SS. (Third Sandstone)	46	"	717	=
? pocket,	11	"	728	=

Drilled dry. Cased at —.

3d SS. good. Upper 35 feet white and soft, then 5 feet of gray, and remaining 6 feet white but hard.

Natural production, 2 barrels of oil and 8 to 10 barrels of salt water per day.

April 8. Torpedoed and brought the production up to 140 barrels of oil per day, but it rapidly declined to 16 barrels, and on June 24 had still further declined to 12 barrels per day. It never pumped much salt water.

751. Potter Well, No. 6. June 4. 1873.

Colorado district.

Level of well mouth above ocean				
Wooden conductor to rock	18:	feet	. 18	=
7	639	to	657	=
3d SS	46	66	703	=
? pocket,	12	"	715	=

Drilled dry. Cased at 240'.

3d SS. good to the depth of 32 feet, below that finer and not so white.

Oil came in near top of sand, and salt water 4 feet below the top.

Natural production, 2 barrels of oil with 6 or 8 barrels of salt water per day.

June 6, torpedoed and increased the production to 150 barrels of oil daily. Declined in fourteen days to 36 barrels daily.

June 28, 1875, torpedoed 6 feet below top of 3d SS. Result, 3\frac{1}{3} barrels per day.

752. Potter Well, No. 7. July 11, 1873.

Colorado district.

Level of well mouth above ocean			· • • • •	
Wooden conductor to rock	16	feet.	16	=
? (Interval unknown)	629	to	645	=
3d SS. (Third Sandstone)	46	"	691	=
? pocket,	13	"	70 1	=
-				

Drilled dry. Cased at 229'.

3d SS. very soft the first 12 feet, soft the next 14 feet and then harder and not so good as the drill approached the bottom. The well filled up with oil very fast after the sand was struck and while the first "bit" was being run in it.

Natural production, 8 barrels per day.

July 14, torpedoed (3 pint shell) 6½ feet below top of 3d. SS. Result, a production of 100 barrels of oil per day.

Nov. 20 1874, production down to two-thirds of a barrel per day. Torpedoed (giant powder) 7½ feet below top of sand. No increase in gas and very little in oil.

From July 1876, until the 11th of October following, this well produced 2 barrels per day, and then, without any treatment whatever, began to increase. On October 25 it was producing $5\frac{1}{3}$ barrels, November 10, $6\frac{2}{3}$ barrels, and November 25, $5\frac{1}{2}$ barrels.

753. Potter Well, No. 8. April 27, 1876.

Colorado district.

Level of well mouth above ocean				
Wooden conductor to rock	15	feet.	15	=
?	616	to	631	=
3d SS		"	-, -	
? pocket,	10	"	688	=

Drilled dry. Cased at 225'.

3d SS. first 4 feet very hard, next 8 feet very soft; then 9 feet a little firmer but not hard; then 10 feet softer; the remaining 16 feet being about an average sand. The first show of oil was at 21 feet below the top of the sand. Very little salt water and gas came into the hole while drilling, and when the well was tubed there was not more than 20 feet of fluid in it.

Natural production, less than $\frac{1}{4}$ of a barrel of oil with about 5 barrels of salt water per day.

The first torpedo exploded 18 feet below top of sand increased the salt water slightly, but not the oil and gas.

May 8. Second torpedo (3 pint shell) 6 feet below top of sand. No improvement.

May 11. Employed the scratcher. No improvement.

May 12. Torpedoed 30 feet below top of sand. No increase either in oil or gas.

June 6. Put in Quick & Fertig's injector. Still no improvement.

The well was abandoned June 22, 1876, after having been pumped steadily for nearly two months.

754. Darling Well.

Drilled in 1865.

Gilson Run, Warren County.

Level of well mouth above ocean				
Drive pipe		57₺	feet.	
Soft slate	at	70	44	
Very hard slate and 3-inch crevice	44	78	46	
20 inch of salt water	66	145	44	
Soft slate, 15 inch crevice	"	175	"	
Very fine sandrock	66	185	66	
12 inch crevice	"	230	66	
Some oil, 15 inch crevice	"	290	"	
Bottom of sandrock	66	310	44	
Grey sandrock	"	355	44	
Water course carrying away everything from				
the well	"	373	44	
Some oil, 15 inch crevice	66	399	"	
Fine white sand	"	411	"	
Bottom of sand	"	426	**	
Flint and slate	"	450	"	
Top of sandrock	"	514	46	
Coarse white pebble sand, 6 inch crevice	"	522	"	
Pebble rock and bottom of well	66	541	64	
			_	

This well was never cased. The water was shut off by seed bag on tubing. It was pumped some time, producing several barrels of oil which is supposed to have come from the 2d SS

755. Clifton Well, No. 1.

April, 1872.				
Colorado district, south-east corner of	f tra	ct :	200.	
Level of well mouth above ocean in feet				
? (Interval unknown)	_		402	==
1st SS. (First Sandstone) estimated	20 123	66	422 545	==
?	123	"	564	=
2d SS	84	66	648	<u> </u>
3d SS	42	46	690	=
Drilled dry. Cased at 264'.				
Very poor sand. Well never tubed.				
756. Eclipse Well	•			
Colorado district.				
Level of well mouth above ocean				•••
61-inch casing to rock			. 48	=
Mountain sand	162	to	210	
?	240 20	66	450 470	=
1st SS. (estimated)	20 55	"	525	=
2d SS. (estimated)	10	66	535	=
?	45	66	580	=
3d SS. (estimated)	20	"	600	=
2	76	"	676	== '
4th SS	29	66	705	===
? pocket,	12	66	717	=
757. Cadwell Wel	7			
	٠.			
Hill farm, Colorado district.				
Level of well mouth above ocean			••••	•••,
64-inch casing to rock	36	to	36	=
?	230	"	266	==
1st SS	29 105	33	295 400	==
? 2d SS	105	44	418	=
20.55	83	46	501	
3d SS	46	66	547	=
? pocket,	4	66	551	=
Wet hole. Cased (3\frac{1}{4} inch) at 275'.				
Abandoned December 30, 1875,				
Trightness recentives on 1010?				

758. Onondaga Well.

Level of well mouth above ocean				
Drive pipe	62	feet	. 62	=
? (Interval unknown)	137	to	199	=
SS. (Sandstone,) gray	25(?)"	224	=
?	236	"	455	==
2d SS	15	"	470	=
?	51	"	521	=
3d SS	13	. 66	534	=
?	36	"	570	=
4th SS	15	""	585	=
7	90	66	675	=
5th SS	26	64	701	=
Soft measures. No sandstone	99	"	800	==

GROUP 2.

ENTERPRISE, WARREN COUNTY.

Benedict Estate Wells, copied from office records.

759. Benedict Estate Well, No. 1.

Level of well mouth above ocean			. .	
6	192	to	192	=
1st SS	50	"	242	==
?			300	
2d SS	4	"	304	==
?	31	"	335	=
3d SS	10	"	345	=
?	117	"	462	=
4th SS	15	66	477	=

760. Willard Well, No. 1.

Level of well mouth above ocean				•••
Upper measures not noted	443	to	443	==
-24 59	25	66	468	==

761. Harvey Well, No. 1.

Level of well mouth above ocean				• • •
?	180	feet	. 180	=
1st SS.	49	to	229	=
7	71	"	300	=
:2d SS	6	"	306	=
	_			

8—I.I.

114 I.I. OIL WELL RECORDS. J. F. CARLL, 1877.

?	16	to	322	
3d SS			334	
•	95	66	429	-
4th SS	6	"	435	==
?	14	46	449	==
5th SS., oil	15	66	464	=

762. M'Kinney Well, No. 1.

Level of well mouth above ocean				
Upper measures not noted	441	to	441	=
3d SS	21	"	462	=

763. Reed Well.

Adjoining Benedict estate. Record from memory of driller.

Level of well mouth above ocean				
? (Interval unknown)			. 150	
1st SS. (First Sandstone)	52	to	202	==
Slate, blue	118	"	320	==
2d_SS	14	46	334	=
SS., hard, gray	12	"	346	=
Slate, black	99	"	445	=
Stray SS., gray	12	46	457	=
Slate	12	"	469	=
3d SS [doubtful whether 12 or 22]	22	"	491?	=

GROUP 3.

DENNIS RUN.

Wells of the Tidioute and Warren Oil Co., on Dennis Run, between Triumph and Tidioute. Records furnished by Major Cushing, of Tidioute.

764. Lease No 58, Well No. 1.

Well mouth above ocean				(?)	1236
?					
1st SS	30(?)	"	75	?=	1161
?	62	"	137	=	1099
2d SS	25(?)	"	162	? ==	1074
7	133	44	295	=	941
Stray SS	47				
; ? pocket,	8	"	350	=	886 -
Denth of well.					

765. Well No. 2.

Level of well mouth above ocean -? (Interval unknown) 1st SS. (First Sandstone) ? 2d SS. ? Stray SS. ? 3d SS.	. 124 . 29 . 63 . 28 . 26 . 16	to	124 153 216 244 270 286 376 424	
766. Well No.	3.			
Level of well mouth above ocean ? 1st SS. ? 2d SS. ? Stray SS. ? 3d SS. At 436 first show of oil; at 445 sec	. 180 . 30 . 60 . 35 . 35 . 25 . 60	to	180 210 270 305 340 365 425 475	
767. Well No.	4.			
Level of well mouth above ocean. ? lst SS. ? 2d SS. ? Stray SS. ? 3d SS.	. 320 . 35 . 55 . 35 . 27 . 13	to	320 355 410 445 472 485 567 594	
?	320 35 55 35 27 13 82 27	44 44 44 44	355 410 445 472 485 567	

GROUP 4,

TRIUMPH, WARREN COUNTY.

Wells of the Triumph Oil Co. Records from the Books in Office of Company.

769. Well No. 23.

103. PP 800 110. 20.
Level of well mouth above ocean
?
(Fine hard sand
Medium # 12 # 702
3d SS. Good " 17 " 720
79 feet. Pebble (crevice at 722½)
Good sand
, (GOOD BAILD
770. Well No. 101.
Level of well mouth above ocean
? (Interval unknown) 662 to 662 =
3d SS. (First Sandstone)
?pocket, 6 " 756 =
Q J
Sand very good.
771. Well No. 146.
Level of well mouth above ocean
? 694 to 694 =
3d SS 96 " 790 =
Coarsest from 764' to 774'.
Salt water at 773'.
772. Well No. 148.
Level of well mouth above ocean
? 712 to 712 =
3d SS
Coarsest sand at 795'.
Mud vein at 732', 765' and 785'.
, , , , , , , , , , , , , , , , , , , ,
773. Well No. 149.
On highest point of hill.
-
Level of well mouth above ocean
7 729 to 729 =

(Pebble	2			
Coarse sand	1 2	66	732 734	
3d SS. Pebble	20	"	754 754	
74 feet. Coarse sand	10	66	764	
Pebble	20	"	784	
Coarse sand	12	"	796	=
[Pebble	4	46	800	=
Medium sand	3	"	803	==
? pocket,	6	66	809	=
774. Well No. 152.	В.			
Level of well mouth above ocean				
? Interval unknown)	712	66	712	
3d SS. (Third Sandstone)	90	"	802	=
? pocket,	3	"	805	=
Upper 60 feet fine.				
Lower 30 feet coarse.				
775. Well No. 224	ŀ.			
Level of well mouth above ocean		•••		
?	675	to	675	=
3d SS	107		782	==
? pocket,	3	"	785	=
Good sand at 759'.				
Pebble at 782'.				
776. Well No. 237	7.			
Level of well mouth above occan				
,	667		667	=
(Fine sand	56	86	723	=
33 NS Very coarse pebble	20		743	=
106 feet. Fine sand.	10		753	=
Grayish pebble	20		773	=
?pocket,	8	"	776	=
Mud at 701' and 710'.				
Salt water at 747'.				
777. Rising Sun W	r.11			
	cu.			
Dennis run. From S. Minor.				
Level of well mouth above ocean		••••	304	• • •
7	104 30		104 134	<u> </u>
1st SS	81			=
2d SS	28		223	=
•	117		340	=
3d SS	28		368	=

118 I.I. OIL WELL RECORDS. J. F. CARLL, 1877.

There was a gray rock about 20 feet below the 2d SS., and sometimes 25 feet thick. All the rocks were very hard.

GROUP 5.

DENNIS RUN.

Wells of J. & E. W. Parshall, on tract of N. Y. and Allegheny Oil Co., Dennis run, near Tidioute. Furnished by Mr. Parshall.

778. Well No. 4.

Level of well mouth above ocean				
-? (Interval unknown)			320	
1st SS. (First Sandstone)(estimated)	30	"	350	=
?(including 2d SS.)	230	"	580	-
3d SS	36	66	616	=
? pocket,	5	**	621	==
779. Well No. 5.				
Level of well mouth above ocean				
7			330	
1st SS. (estimated)	30	"	360	=
: ? (including 2d SS.)	230	"	590	=
3d SS	40	44	630	==
•				
780. Well No. 7.				
Level of well mouth above ocean		.		
7			240	
1st SS. (estimated)	30	16	270	
? (including 2d SS.)	222	"	492	=
3d SS	50	"	542	==
? pocket,	5	"	547	=
781. Well No. 9.				
Level of well mouth above ocean	•		 .	
? (including 1st SS.)	301	to		
2d SS. (estimated)	25	"	326	
?	115	46	441	=
8d SS	66	"	507	=
? pocket,	6	"	513	==

782. Well No. 10.

Level of well mouth above ocean				
? (Interval unknown)	224	to	224	==
1st SS. (First Sandstone) (estimated)	30	"	254	=
?(including 2d SS.)	208	"	462	=
:3d SS	69	"	531	==
? pocket,	23	æ	554	==
783. Well No. 12. Level of well mouth above ocean		•••		•••
•	255	to	255	===
1st SS. (estimated)	30	"	285	==
?(including 2d SS.)	233	"	518	=
:3d SS	82	46	600	=
? pocket,	20	"	620	=

GROUP 6.

DENNIS RUN.

E. W. Parshall's Wells on the Dennis Run Tract.

784. Well No. 1.

Level of well mouth above ocean				
?	110	to	110	<u></u>
Mountain SS	37	"	147	=
?,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	151	"	298	==
1st SS	43	"	341	=
	89	"	430	==
:2d SS	30	"	460	=
?	91	"	551	=
3d SS	36	"	587	
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	15	"	602	
785. Well No. 2.				
Level of well mouth above ocean				
2	73	to	73	-
Mountain SS., estimated	35	"	108	=
?	153	"	261	=
Ilst SS., estimated	40	"	301	=

120 I.I. OIL WELL RECORDS. J. F. CARLL, 1877.

?			389	
2d SS., estimated	-		419 514	
3d SS	50	"	564	==

786. Well No. 3.

Level of well mouth above ocean				
? (Interval unknown) including Mount'n SS.,				
1st SS. (First Sandstone)	32	"	306	==
? including 2d SS.,	221	"	527	==
3d SS	50	"	577	=

GROUP 7.

TIDIOUTE.

Richardson, Tidioute. East side of Allegheny river. From. Messrs. Rallston & Harrington.

787. Well No. 1.

Situated half way down the hill.

Level of well mouth above ocean				
1	84	to	84	=
1st SS	24	"	108	=
**	29	"	137	=
2d SS	23	**	160	=
7,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	76	"	236	=
2d SS	9	"	245	

788. Well No. 2.

Up the hill.

The Aet of Melt mount above occur				
•	310	to	310	==
1st SS	20	"	830	==.
*	24	66	354	-
2d 88	24	44	378	=
	71	"	440	=
\$d.56	11	#	460	==

GROUP 8.

OIL CREEK.

The following condensed tabular statements of the Columbia Farm (old "Story Farm") oil wells are valuable for their completeness and high authority, being furnished by the officers of the company with a full understanding of their scientific and practical value.

The data embraced in this table will be discussed in the Report of Progress, I.I.I., 1877.

No columns of elevation above tide, nor even of relative levels of the well mouths to each other can be given here, because the connection has not been made with the spirit level. But this will not prevent the reader from constructing his own diagrams showing the variability of the sand rocks and of the intervals between them.

Were the data given to correlate all the geological features of this important group of wells, a flood of light would be thrown upon some of the gravest questions connected with the oil deposits. It is to be greatly regretted that each one of the wells of such a group had not been studied by a geologist at the time when it was bored. Most of the facts essential to a right understanding of the subject were ignored because undervalued, and are forever lost.

122 I.I. OIL WELL RECORDS. J. F. CARLL, 1877.

Columbia Farm (Old Story Farm) on Oil Creek, one mile below Columbia

		Depth ductor	Rock	FIR	ST S	AND.	Rock interval.	SECO	ND SA	ND.
	NAME OF WELL.	H C	int	To		Во	int	j,		Во
			interval	Тор		Bottom.	Aze	Top		Bottom
		con-	al.	:		i.	<u> </u>	:		:
789	Babcock	36	304	340	50	390	52	442	25	467
790 791	Stewart	18 18	276 399	294 417	39 47	333 464	103 74	436 538	26 25	463 563
792	Jones	27	292	319	37	356	105	461	24	485
793	Blocher	30	207	237	28	265	105	370	23	393
794 795	No. 58 No. 59	27 18	313 282	340 300	33 19	373 319	72 124	445 443	36 21	481
796	No. 61	21	458	479	21	500	101	601	23	624
797 798	No. 62 No. 64	27 27	470 498	497 525	32 30	529 555	73 82	602	34 33	636
799		18	518	536	81	567	101	668	23	.691
800	No. 69	· 24	528	552	27	579	85	664	31	695
801 802	No. 70 No. 71	24 27	146 502	170 529	29 44	199 573	111	310 680	27 20	337
803	No. 72	18	272	290	35	325	105	430	40	470
804	No. 73	18	262	280	35	315	102	417	18	435
805 806	No. 74 No. 77	18 36	257 483	275 519	30 42	305 561	105 97	410 658	27 22	437 680
807	No. 78	18	487	505	25	530	123	653	22	675
808	No. 80	27	525	552	35	587	107	694	24	718
809 810	No. 81	18 18	322 312	340 330	45	385 370	100 115	485 485	30 25	515 510
811	No. 82 No. 85	27	258	285	55	340	95	435	20	455
812 813	No. 86 No. 87	36 45	304 315	340 360	50 32	390 392	85 98	475 490	25 24	500 514
		18	262	280	30	310	135	445	24	469
814 815	No. 90	18	287	305	50	355	105	460	20	480
816 817	No. 91 No. 94	18 54	269 171	287 225	57 20	344 245	115 120	459 365	22 33	481 398
818	No. 94 No. 96	18	382	400	40	440	85	525	39	564
\$19	No. 97	45	290	335	50	385	103	488	20	508
820 821	No. 99 No. 100	27 27	508 375	535 402	45 53	580 455	105 84	685 539	20 15	705 554
822	No. 101	26	354	380	50	430	101	531	24	555
823	No. 103	27	283	310	40	350	90	440	41	48L
824 825	No. 104 No. 105	27 18	438 339	465 357	50 53	515 410	92 90	607 500	24 27	631 527
826	No. 106	27	482	509	50	559	100	659	25	684
827 828	No. 107 No. 108	27 18	281 527	308 54 5	40 31	348 576	102 103	450 679	26 72	476 751
829	No. 109	9	521	530	40	570	110	680	30	710
830	No. 110	36	464	500	37	537	143	680	20	700
831 832	No. 111	18 27	350 313	368 340	47 35	415 375	92 80	507 455	55 35	562 490
833	No. 113	18	417	435	50	485	97	582	18	600

Petroleum Centre, Venango Co., Pa. From the books of the Oil Company.

Rock	ST	RAY SAN	ID.	Rock	TH	IRD SAN	īD.	Pock	Feet
Rock interval.	Top		Bottom.	Rock inverval.	Тор		Bottom	Pocket	Feet depth
76 58 49 68 76	543 520 612 553 469	30 30 30 30 31	573 550 642 583 500	20 21 20 20 20 10	593 571 662 603 510	50 53 54 51 52	643 624 716 654 562	10 3 6 3 8	653 627 722 657 570
39	520	32	552	20	572	43	615	3	618
46	510	30	540	19	559	53	612	6	618
53	677	33	710	21	731	49	780	15	795
44	680	30	710	19	729	41	770	11	781
53	723	30	753	17	770	40	810	0	810
63	754	32	786	18	804	46	850	0	850
52	747	34	781	12	793	39	832	5	837
60	897	33	430	17	447	45	492	3	495
54	754	30	784	21	805	40	845	5	850
37	507	25	532	3 0	562	42	604	0	604
74	509	33	542	14	556	50	606	0	606
69	506	30	536	15	551	37	588	7	595
78	758	28	786	12	798	45	843	0	843
54	729	31	760	15	775	40	815	6	821
67	785	27	812	15	830	36	866	2	868
53 40 45 51 54	568 550 500 551 568	31 33 33 29 30	599 583 533 580 598	19 17 22 20 21	618 600 555 600 618	34 38 40 45 50	652 638 595 645 668	3 3 3 3	655 641 598 648 671
46	515	31	546	20	566	39	605	5	610
53	533	26	559	15	57 4	38	612	3	615
64	545	29	574	12	586	37	623	4	627
49	447	33	480	20	500	40	540	5	545
52	616	27	643	12	655	33	688	2	690
50	558	30	588	22	610	50	660	5	665
52	757	28	785	24	809	41	850	3	853
73	627	30	657	18	675	50	725	2	727
63	618	33	651	17	668	30	698	3	701
71	552	21	573	17	590	50	640	2	642
60	691	26	717	19	736	50	786	5	791
45	572	30	602	35	637	40	677	1	678
53	737	30	767	17	784	50	834	5	839
64	540	29	569	16	585	54	639	3	642
33	784	27	811	13	824	44	868	2	870
65	775	27	802	13	815	39	854	1	855
50	750	30	780	20	800	35	835	2	837
18	580	33	613	19	632	52	684	5	689
53	543	29	572	10	582	43	625	3	628
55	655	32	687	18	705	35	749	3	743

124 I.I. OIL WELL RECORDS. J. F. CARLL, 1877.

Columbia Farm (Old Story Farm) on Oil Creek, one mile below Columbia

	Depth of ductor	Rock	FIR	st s.	AND.	Rock	SECOND SAND.		
NAME OF WELL.	h of con-	Rock interval,	Top		Bottom	interval,	Top		Bottom.
834 No. 114	27	405	432	72	504	72	576	24	600
	27	308	335	37	372	100	472	25	497
	27	445	472	38	510	108	618	21	639
	9	206	215	40	255	94	349	20	369
	18	517	535	32	567	99	666	25	691
889 No. 119	18	304	322	18	340	125	465	20	485
	18	492	510	30	540	102	642	23	665
	30	143	173	29	202	111	313	27	340
	36	134	170	40	210	90	300	35	335
	14	346	360	45	405	110	515	25	540
844 No. 124	16	294	310	30	340	135	475	25	500
	30	304	334	38	372	97	469	23	492
	15	441	456	20	476	124	600	24	624
	18	410	428	20	448	102	550	24	574
	18	312	330	56	386	100	4 86	25	511
849 No. 129	27	235	262	35	297	102	399	28	427
	20	286	306	41	347	100	447	28	475
	18	507	525	40	565	100	665	24	689
	16	217	233	30	263	110	378	24	397
	26	169	195	45	240	105	345	20	365
854 No. 134	13	470	483	39	522	98	620	35	655
	28	469	497	30	527	102	629	29	658
	13	417	430	71	501	72	573	23	596
	11	349	360	40	400	100	500	26	526
	14	366	380	45	425	95	520	22	542
859 No. 139	86	306	842	39	881	99	480	28	508

Petroleum Centre, Venango Co., Pa. From the books of the Oil Company.

Rock	ST	RAY SAN	VD.	Rock	TE	IIRD SA	ND.	Pocket.	Feet
Rock interval.	Top	Bottom		Rock interval.	Top		Bottom.,	9t	Feet depth
62	662	30	692	18	710	48	758	2	760
60	557	29	586	19	605	52	657	7	664
91	730	31	761	*	750	41	791	2	793
64	433	33	466	18	484	52	536	5	541
62	753	33	786	17	803	45	848	5	853
53	538	30	568	12	580	55	635	5	640
66	731	27	758	20	778	47	825	5	830
61	401	33	434	22	456	45	501	2	503
58	393	31	424	18	442	43	485	2	487
61	601	29	630	20	650	45	695	5	700
85	585	26	611	14	625	38	663	0	663
72	564	22	586	20	606	47	653	2	655
44	668	29	697	18	715	53	768	3	771
53	627	31	658	20	678	54	732	2	734
47	558	27	585	18	603	37	640	5	645
73	500	26	526	12	538	45	583	5	588
77	552	24	576	14	590	40	630	2	632
63	752	28	780	20	800	41	841	3	844
61	458	32	490	17	507	35	542	30	572
64	429	33	462	17	479	38	517	20	537
45	700	35	735	25	760	50	810	5	815
62	720	32	752	15	767	40	807	8	815
64	660	28	688	17	705	45	750	10	760
80	606	26	632	*	630	55	685	5	690
81	623	30	653	*	650	52	702	5	707
43	551	29	580	34	614-	44	658	5	663

^{*}These are evidently errors in Nos. 116, 137 and 138, as the bottom of the Stray SS. as here given overlaps upon the 3d SS.

Notes.

In drilling an oil well the measures passed through are necessarily divided into three groups or divisions. Each one of these divisions requires a specific treatment at the hands of the driller.

The first division is composed of drift or the loose surface accumulations from the surrounding rocks; the second embraces the immediately underlying series of stratified rocks to the depth at which they contain water; and the third, the remainder of the well, including the oil sands at the bottom. The walls of the third division are generally self-supporting, remaining just as the drill leaves them, and this division, when the well is completed, is the only one where the rocky walls are bare.

The first division, owing to the loose and crumbling material of which it is composed, requires some mechanical device to prevent it from slipping or caving into the hole as it is drilled. Here the "conductor" is used. A "conductor" may be simply a long box, without ends, made by spiking together four planks 2" thick by 10" wide—a "wooden conductor;" or it may be "drive pipe," composed of a number of cast-iron cylinders joined together and driven through the deposit; or it may be what is now more generally used, wrought-iron "surface casing," put in in a somewhat similar manner.

The "wooden conductor" can only be economically used where the surface deposit is of inconsiderable depth, as a pit must be sunk to the rock before it can be put in place. After the rock has been laid bare by the pick and shovel, the "conductor" is securely set between it and the derrick floor, the drill is let down to the rock through the conductor and the work of boring commences.

Where it is suspected that the floor of the drift lies too deep to be reached by digging, cast-iron "drive pipe" is used. This pipe is cast in sections about 9' long. A space of 4" at each end is carefully turned in a lathe to a certain gauge, and the end is cut smoothly at right angles to the axis of the pipe, so that the joints will stand perpendicularly one upon the other. A joint of pipe is placed on end in the centre of the derrick between two "guides," which have been temporarily erected for the purpose of driving it. A heavy "mall" working between these

guides is raised and dropped upon the pipe, slowly forcing it into the ground, precisely as piles are driven for docks, bridges, &c. When the top of a joint has been driven to the level of the derrick floor a band of wrought-iron, made to fit the turned ends of the pipe, and heated red-hot, is quickly slipped upon the end of the driven pipe and another joint at once set up. The contraction of this band in cooling holds the two joints firmly together, and the driving process then goes on. In this way joint after joint is added and driven until solid rock is reached. As many as 23 joints have been used in a well. Great care is required when so long a "string of pipe" is driven to keep it straight and perpendicular, a broken band, or a large boulder encountered may cause the pipe to so far deviate from the perpendicular as to necessitate the abandonment of the well. To avoid this the pipe should be frequently cleaned out by the drill while being driven.

The more common method now employed in driving the well shafts through these thick accumulations of loose materials is to use heavy wrought-iron casing, made expressly for the purpose and armed with a hardened collar or "shoe" at the bottom. This casing is made in joints about 20' in length, which screw together in wrought-iron "thimbles," the same as do ordinary gas pipes. The tube being thin and light, as compared with cast-iron drive pipe, cannot be so forcibly driven, but is worked down carefully by drilling a hole the full size of its inside diameter, and always keeping this hole open some feet in advance of the bottom of the pipe. In the old filled up valley of the Tunanguant, at Tarport, M'Kean Co., Pa., from 200' to 300' of this casing is required in each well.

Wells are spoken of indiscriminately as "small holes" or "wet holes" on the one hand, and as "cased holes" or "dry holes" on the other. A "small hole" must necessarily be a "wet" one, for there is no room to case off the water while drilling; and a "cased hole" must necessarily be a "dry" one, if the casing accomplishes the purpose for which it is used.

If now a well is to be drilled "wet," that is, if no effort is to be made to shut off the water which comes into it from the second division mentioned above, to keep it from following the drill down to the oil rocks, then this "conductor" of which we

have been speaking, whether of wood, cast-iron or casing, needs only to be 6" in diameter, inside measurement. But if the well is to be drilled "dry" an 8" conductor must be used, as will be seen further on.

In the first case, (for a wet well,) after the conductor is in place, a plain $5\frac{1}{2}$ " hole is drilled all the way to the oil rocks; the water, meantime, nearly filling the well, or perhaps overflowing at the top of the conductor.

In the latter case, (for a dry hole,) an 8" hole is to be drilled from the bottom of the conductor to a point below the water veins. When this is done, a 5\frac{5}{8}" casing (inside diameter) is inserted, with a device on the bottom so arranged that it will form a water tight joint between the casing and wall of the well. A 5\frac{1}{2}" hole is then continued down to the oil rocks from the inside of this last "string of casing." If the casing has been inserted to the proper depth and no water is encountered below it, the sand-pump will soon exhaust the water in the process of drilling, and the well be perfectly dry. But if lower veins of water are struck, the casing must be drawn, the hole reamed out to a greater depth, and the casing continued down below them. After the water is exhausted, a few pails full are poured in, as circumstances demand, to moisten the drillings and furnish fluid for the sand-pump.

Comparing now the two wells when completed and ready for the pump, we find them both of the same size, $5\frac{1}{2}$ " in diameter. One has simply a conductor through the upper division, all the stratified rocks being bare, is full of water, and has probably shown but very little indication of oil. The other has a conductor through the upper division, casing inside of this to the bottom of the middle division, and is dry—or at least was dry until the striking of the oil sand, when it immediately filled up several hundred feet with oil, or perhaps flowed.

The "dry" well is ready at once for the introduction of the pump tube; the "wet" one must be cased before it is tubed. The casing used for this purpose ("small casing,") is of 3½" inside diameter. A "water packer" or "seed bag" is attached to its lower end, which effectually closes the annular space between the outside of the casing and wall of the well. This "small casing," of course, must extend down to the bottom of

the second division, the same as the large casing does in the "dry" well, for it has precisely the same duty to perform, the shutting off of the water in the upper rocks from the well shaft.

The well is now tubed with the ordinary 2" "tubing," having a "working barrel" or pump chamber at the bottom, which is placed at or near the point where the oil enters.

Inside of the "tubing" are inserted the "sucker rods," which are connected in the derrick to the "walking beam," and operate the pump valves below.

Upon starting the pump the "water packer" prevents any of the fluid outside of the casing from entering the well, and the water inside of the casing and in the uncased portion of the well is soon pumped out and the well is said to be "exhausted." As the well exhausts, the oil, which has been held back in the rock by the pressure of the heavy column of water above it, gradually forces its way into the well and is raised by the pump to the surface, unless it has a sufficient force of gas to flow of its own accord afterwards.

Further and detailed information on these and other points will be published in the Report of Progress, I.I.I., 1877.

CHAPTER V.

PITHOLE.

Records of Wells at Pithole City and vicinity, Cornplanter township, Venango County, drilled on the M'Kinney, Morey, Holmden, Rooker, Ball, Hyner, Babbitt, Reynolds and Dawson Farms.

These Pithole wells were drilled in 1865 and 1866, before the introduction of "dry casing" and before the ordinary 3½ inch casing had come into general use. The larger part of them, therefore, were tested in the primitive way with a common flax-seed bag on the tubing.

Authority, (unless otherwise stated,) Mr. Samuel Minor, of Titusville, to whose large experience in oil operations and wice forethought in preserving every record obtained, in a book kept especially for the purpose, we are indebted for much valuable information in connection with these old wells.

GROTTP 1.

M'KINNEY FARM.

(15 Wells.)

860. Well No. 1, Lease No. 10.

Well mouth above ocean in feet.					
? (Interval unknown)		120	to	120	=
1st SS. (First Sandstone)	estimated	12	66	132	==
?		225	"	357	=-
2d SS., estimated		22	66	379	_=
?		65	66	444	_
3d SS., estimated		18	"	462	==
?				599	
4th SS		21	66	620	===

Wet hole. Seed bag at 372' not effectual, but at 490' effectual. No salt water.

861. Well No. 2. Lease No. 10.

December, 1865.

Authority, H. M. Haskell.

Well mouth above ocean in feet					1336
? (Interval unknown)			115		
1st SS. (First Sandstone)		"	127	==	1209
?	235	"	362	=	974
2d SS	22	"	384	=	952
?	56	"	440	=	896
3d SS	17	"	457	=	879
?	38	"	495	=	841
Stray	8	"	503	==	833
?	102	"	605	=	731
4th SS	20	44	635	==	701

Wet hole. Seed-bagged on tubing at 500'. Production, 28 barrels per day.

In July, 1866, the well was cased at 500', with 3½" casing, and the production immediately increased to 70 barrels per day. In March of the following year it was still doing about 60 barrels.

862. Well No. 17.

Well mouth above ocean in feet				
Conductor	8 :	feet	•	
Slate	92	to	100	
1st SS	5	46	105	=
?	260	16	365	==
2d SS	12	"	377	=
?	88	"	465	=
3d SS., 18 inch crevice	12	"	477	==
?	125	"	602	==
4th SS, 8 inch crevice	17	"	619	=
? pocket,	1	"	620	=

Wet hole. Seed bags at 365' and 465'. This well was located on east bank of Pithole creek.

863. Well No. 29 (Old No. 6).

Well mouth above ocean in feet					
?,	375	to	375	=	
2d SS	26	"	401	=	
?	55	"	456	-	
3d SS., A	21	66	477	<u>-</u>	

Scapstone	8	to	485	=
? estimated	30	66	515	==
3d SS., B	30	"	545	=
pa. 6	55	"	600	=
4th SS	28	"	628	==

Wet hole.

864. Well No. 39.

Well mouth above ocean in feet				
Drive pipe	35	to	35∙	==
? (Interval unknown)	88	66	123	==
1st SS. (First Sandstone)	40	**	163	==
Black sandy rock	89	"	252	=
2d SS., thin and in hard streaks.				
3d SS., about 14 feet thick.				

Wet hole. Seed bag at 369'.

Fourteen inch crevice at 611', and 5 inch crevice at 614'. This well was located on the bank of Pithole creek.

865. "Island Well," or No. 40.

Well mouth above ocean in feet				
9	599	to	599	=
4th SS	26	46	625	=

Wet hole. Seed bag at 347'. Tubed at 586'.

When pumping, the gravity of the oil was about 45°; when flowing it was about 47°.

When the sucker rods were drawn it increased the flow from 90 to 240 barrrels, and so the flowing continued for six months, when it fell to 92 barrels.

Before the 4th SS. was struck the water constantly ran over the drive pipe, but upon striking the 4th SS. the water dropped 15'.

Since pumping began the well has produced from 10 to 40 barrels per day.

866. Well No. 63.

Well mouth above ocean in feet				
Drive pipe	63		63	
7	90	•6	153	=_
1st SS			203	
OA DEC			400	
2d SS			440	
9			480	
3d SS	20	"	500·	=

?	36 9 92 20	"	536 545 637 657	=
867. Well No. 68	3.			
Well mouth above ocean in feet				
? (Interval unknown)		to		<u>-</u>
1st SS. (First Sandstone)estimated		, " "	210	=
9	146	"	356	==
2d SS	19	23	375	=
?	65 12	"	440 452	=
?	8	"	460	=
3d SS., B, hard white SS., estimated	18	"	478	=
?	27	"	505	=
4th SS	17	"	522	=
?	80	"	602	=
5th SS	12	"	614	=
? pocket,	12	"	626	=
Wet hole.				
868. Well No. 73				
Well mouth above ocean in feet				
?	128	to	128	···
1st SS.	16	"	144	
?	284	**	428	=
2d SS	18	**	446	=
?	44	"	490	=
3d SS., A	12	"	502	=
?	30	"	532	=
3d SS., B	18	"	550	==
##. CO (101 01 227 41 24->	78	"	628	=
4th SS.(12' gray, 6' pebble, 4' white)	22 5	"	650 655	=
Slate and shells pocket,	-			=
Wet hole. Well pumped red water,	but n	10 0)1 1.	
869. Well, No. 91.				
Well mouth above scean in feet				
Conductor	50	to	50	=
?	129	66	179	_
1st SS., estimated	40	"	219	=
?	188	"	407	=
2d SS	27	66	434	=
7	61	"	495	=
3d SS., A	20 40	"	515 555	=
f	411	••	อออ	

3d SS., B	15	to	570	=
7	75	"	645	==
4th SS	25	"	670	==
? pocket,	10	"	680	=
Wet hole.				

870. Well No. 103.

Well mouth above ocean in feet				
Drive pipe	48	to	48	=
? (Interval unknown)	131	"	179	=
1st SS. (First Sandstone)	100	"	279	=
2	127	"	406	=_
2d SS	44	"	450	=
?	52	"	502	=
3d SS., A	19	"	521	==
?	3 3	"	554	=
3d SS., B, (gray)	23	"	577	==
7	65	66	642	=
4th SS., A	20	"	662	=
Mud vein	1	"	663	=
4th SS., B	11	66	674	=
? pocket,	6	"	680	=_
TXT at halo				

Wet hole.

871. Well No. 104.

About 48 feet above Pithole creek.

Well mouth above ocean in feet				
Drive pipe	54	to	54	=
7	104	"	158	==
1st SS	52	"	210	==
	210	"	420	=
2d SS	10	"	430	==
· · · · · · · · · · · · · · · · · · ·	52	"	482	==
3d SS	20	"	502	==
·	33	"	535	=
4th SS { Upper part, red } Lower part, gray }	25	"	560	=
?	78	"	638	=
5th SS	18	••	656	=

Wet hole.

In the 5th SS, there was a hard shell of nine inches and a crevice of one foot just below the shell.

Depth of well, 655'; drilled 17' in the sand.

The well was afterwards drilled deeper and another sand was found at 664'. After drilling 2 feet into this sand the tools stuck.

872. Well No. 105.

	** CCC 110. 1				
Well mouth above ocean in feet.	• • • • • • • • • • • • • • • • • • •	• • • • • • •		• • • • •	
Drive pipe	• • • • • • • • • • • • • • • • • • • •	54	to	54	==
? (Interval unknown)		352	44	406	==
2d SS. (Second Sandstone)		40	44	446	=
?		44	"	490	==
.3d SS., A			"	510	==
?			44	542	==
3d SS., B			"	561	=
?			"	644	=
4th SS			"	662	=
?			"	667	=
		υ, υ		001	
Wet hole. Mud vein at	001.				
873.	Well No. 1	107			
Well mouth above ocean in feet.					
Conductor	• • • • • • • • • • • • •	. 19	to	19	=
?		163	66	182	==
1st SS		. 35	"	217	===
?			66	430	=
·2d SS		. 15	"	445	=
?			"	503	=
3d SS., A			"	523	_
			"	558	_
?		•	66	583	_
.3d Ss., B		-	"	655	
?			48	674	=
4th SS					
?		5, 6	"	680	=
Wet hole. Seed bag at 4	:37′.				
874.	Well No. 1	19.			
Well mouth above ocean in feet					
Drive pipe			to	20	
Sandstone			"	40	=
?			46	235	=
1st SS., estimated.		-	66	270	
			"	410	=
?			"	422	=
-2d SS., A			66	424	
Slate			"		==
2d SS., B			46	457	==
?				500	==
3d SS. (crevice and oil show at 50	•		"	520	=
?			46	550	=
4th SS		. 23	ŧť	573	==
?			"	653	=
5th SS. (fine and hard; mud at 66	1')	. 19	"	672	=
Slate			"	676	=
6th SS			46	688	=
?	pocket	, 3	"	691	=

Wet hole. The drive pipe struck the thinned edge of one of the mountain sands cropping out on the hillside.

GROUP 2.

MOREY FARM.

(10 wells.)

875. Well No. 1, Lease No. 1

Well mouth above ocean in feet	• • • • •			
? (Interval unknown)	113	to	113	=
1st SS. (First Sandstone)	19	"	132	=
?	224	"	356	==
2d SS	16	"	372	=
?	73	"	445	=
3d SS., estimated	30	"	475	=
9	115	"	590	==
4th SS. (crevice at 600')	15	"	605	==
Wet hole.				

876. Well No. 1, Lease No. 2.

Well mouth above ocean in feet				
?	120	to	120	=
1st SS	66	46	186	==
?	173	**	359	=
2d SS	24	"	383	==
?	57	"	440	=
3d SS., estimated	30	"	470	=
?	117	"	587	=
4th SS., estimated	16	"	603	==
777-2-11.				

Wet hole.

877. Well No. 1, Lease No. 3.

Well mouth above ocean in feet					
?	122	to	122	==	
1st SS	60	"	182	=	
?	191	"	373	==	
2d SS	10	"	383	=	
?	64	66	447	==	
3d SS., estimated	30	"	477	=	
?			590		
4th SS	15	"	605	==	

Wet hole. Seed bag at 445'. Tubed at 592'. Mud vein at: 610'.

878. Well No. 2, Lease No. 3.

Well mouth above ocean in feet	••••			
? (Interval unknown)	122	to	122	=
1st SS. (First Sandstone)	60	44	182	=
?	191	46	373	==
2d SS	10	"	383	=
?	64	"	447	=
3d SS., estimated	30	"	477	=
?	113	"	590	=
4th SS	15	"	605	=

Wet hole.

At 600' a 2' crevice was found. SS. mixed with pebbles and very shelly.

879. Well No. 3, Lease No. 5.

Well mouth above ocean in feet				
?	124	to	124	=
1st SS	23	"	147	==
	218	46	365	=
2d SS	26	"	391	==
•	52	"	443	==
3d SS	28	"	471	=
?	116	66	587	==
4th SS	20	66	607	=

Wet hole.

880. Well No. 4, Lease No. 5.

Well mouth above ocean in feet				
?	115	to	115	=
1st SS	20	"	135	=
	225	"	360	==
2d SS	30	"	390	=
?	47	"	437	==
3d SS	33	"	470	=
2,	115	"	585	=
4th SS	19	"	604	=

Wet hole. Seed bag at 365'. Tubed at 534'.

At 458' there was a mud vein and crevice, with big show of oil.

The well flowed during the night of the day upon which the pump was started.

881. Well No. 155.

Sixty-five feet above bottom of Pithole creek, situated about 55 rods west of creek.

Well mouth above ocean in feet				
? (Interval unknown)	15	to	15	=
SS. (Sandstone)			55	
	170	"	225	=
1st SS	18	"	243	=
7	214	"	457	=
2d SS	25	66	482	=
	51	66	533	==
3d SS., fine and white	18	"	551	=
TITLE 1				

Wet hole.

882. Well'No. 184, or "Burtis Well."

February 3, 1866.

+ Fifty feet above Pithole creek. Situated about 50 rods west of creek.

Well mouth above ocean in feet				
?	400	to	400	=
2d SS	30	"	430	=
7	57	"	487	=
3d SS	22	"	5 09	=
7	139	"	648	==
4th SS	12	""	660	=

Wet hole.

This well was only drilled into the 4th SS., and not through it. Depth of well, 660'8".

Production at first, (flowing) 600 barrels per day.

883. Well No. 4, Copeland Reserve.

		• • • • •		1334
120	to	120	=	1214
10	"	130	==	1204
240	"	370	=	964
15	"	385	=	949
65	"	450	=	884
20	"	470	=	864
30	"	500	==	834
18	"	518	==	816
91	"	609	=	725
21	"	630	=	704
10	**	640	==	69 1
	120 10 240 15 65 20 30 18 91 21	120 to 10 " 240 " 15 " 65 " 20 " 30 " 18 " 91 " 21 "	120 to 120 10 " 130 240 " 570 15 " 385 65 " 450 20 " 470 30 " 500 18 " 518 91 " 609 21 " 630	240 " 870 = 15 " 385 = 65 " 450 = 20 " 470 = 30 " 500 = 18 " 518 = 91 " 609 = 21 " 630 =

Wet hole.

884. Well No. 8, Copeland Reserve.

Well mouth above ocean in feet				
? (Interval unknown)	160	to	160	===
1st SS. (First Sandstone)	20	"	180	=
?	180	"	360	=
2d SS., estimated	15	"	875	==
?	69	"	444	==
3d SS	33	"	477	=
?	115	"	592	=
4th SS	18	"	610	=
? pocket,	2	"	612	=

Wet hole.

At 580' a shell of SS. was found about 4' thick, and then a mud vein.

This well produced no oil.

Five wells were found on this Copeland Reserve which had not penetrated the 4th SS.

GROUP 3.

HOLMDEN FARM.

(5 wells.)

885. Frazer (United States) Well. February, 1865.

Well mouth above ocean in feet					1324
2	95	to	95	=	1229
1st SS	40	66	135	=	1189
?	215	56	350	=	974
2d SS	30	"	380	=	944
? 	85	"	465	=	859
3d SS	20	"	485	=	839
?	110	66	595	=	729
4th SS	12	66	607	=	717
? pocket,	1	66	608	=	716

Wet hole. Seed bag on tubing at 364½. Tubed at about 590. Fresh water at 115.

This well began flowing a regular stream in January, 1865, at the rate of 200 barrels per day; the sucker rods being at that time in the tubing. In June, 1865, the sucker rods were removed, when the flow increased to 800 barrels per day. The

oil flows in jets, according to trials on four different days, at the rate of 40 jets per minute. The oil at the well has a gravity of 53°, and at the shipping tanks 46°.

886. Well No. 115.

Well mouth above ocean in feet				
? (Interval unknown)(including 1st SS.)	470	to	470	=
2d SS. (Second Sandstone)estimated	10	"	480	=
?	110	"	590	=
3d SS., estimated	20	"	610	=
?	9	"	619	=
4th SS	26	"	645	=

Wet hole. Produced no oil.

887. Well No. 127.

Elevation, 45' above Pithole creek. Situated about 12 rods from Well No. 115, and 14' above it.

Well mouth above ocean in feet				
?	157	to	157	=
1st SS	100	66	257	=
?	128	68	385	=
2d SS	10	"	395	=
?	85	"	480	=
3d SS	20	"	500	=
?	131	"	631	=
4th SS., estimated	15	"	646	=

Wet hole. Produced oil in paying quantities.

888. Well No. 129.

About 55' above Pithole creek.

Well mouth above ocean in feet				
? (including 1st and 2d SS	528	to	528	=
3d SS	11	"	539	=
?	89	"	628	==
4th SS	11	44	639	=

Wet hole.

889. Pithole Water Well.

Holmden farm, Pithole. On the high hill back of Pithole City.

Well mouth above ocean in feet				
Conductor			15	
Slate	30	66	45	=
Slate and SS., mixed	60	"	105	=
Slate	26	"	131	=

\$S., white	38	to	169	=	
Slate	25	66	194	=	
SS. vellow	13	66	207	=	

Supply of water obtained about 50' below the level of the valley of Pithole creek.

GROUP 4.

ROOKER FARM.

(3 wells.)

890. Well near U.S. Well.

Well mouth above ocean in feet				
? (Interval unknown	100	to	100	=
1st SS. (First Sandstone),	35	"	135	=
?	227	"	362	=
2d SS	10	"	372	=
9	88	"	460	=
3d SS	10	"	470	=
,	20	"	490	=
4th SS. (mud veins)	25	"	515	=
?	90	"	605	=
5th SS	15	44	620	=

Wet hole.

891. Well No. 2.

AA GIL HIGHTH STOAG OCCUR IN 1660				• • •	
	100	to	100	=	
1st SS	35	"	135	=	
	227	"	362	=	
2d SS	15	"	377	=	
?	83	"	460	==	
3d SS	10	"	470	=	
?	24	"	494	==	
4th SS	25	"	519	=	
2	86	"	605	=	
5th SS	17	66	622	=	
? pocket,	18	"	640	=	

Wet hole. Crevice of 2' in 3d SS. Mud vein at 513'.

892. Well No. 6.

Well mouth above ocean in feet				
? (Interval unknown)	100	to	100	=
1st SS. (First Sandstone)	43	66	143	=
7	187	"	330	==
2d SS., gray, 18' of shells	50	"	380	=
?	90	"	470	=
3d SS., white, pebbles	20	44	490	=
	30	46	520	=
4th SS., pebble on top	30	66	550	=
?	55	"	605	=
5th SS	4	"	609	=
? pocket,	38	"	647	=

Wet hole. Crevice of 18 inches at 485'; one of 8 inches at. 489', and one of 10 inches at 493'.

GROUP 5.

BALL FARM.

(4 wells.)

893. Well No. 1.

Well mouth above ocean in feet				
?	120	to	120	=
Ist SS	14	"	134	==
?,	236	"	370	=
2d SS	20	"	390	=
?	45	"	435	=
3d SS	22	"	457	=
?	35	"	492	==
4th SS	22	46	514	=
?	83	"	597	=
5th SS	13	44	610	=
? pocket,	5	"	615	=

Wet hole. Mud vein at 505'.

894. Well No. 4.

Well mouth above ocean in feet				
•	103	to	103	=
1st SS., estimated	20	"	123	=
	242	"	365	==
2d SS estimated	20	"	335	=

?	112 15 78 20 6	to " "	497 512 590 610 616	
895. Well No. 5.				
Well mouth above ocean in feet				
? (Interval unknown)	120	"	120	
1st SS. (First Sandstone)	32	"	152	=
•	211	"	363	_
2d SS., white	30	44	393	=
•	51	"	444	=
3d SS., coarse gray	22	88	466	=
?	40	"	506	=
4th SS., hard gray	14	"	520	=
?	63	"	583	=
5th SS., light gray, pebbles at top	27	"	610	=
? pocket,	7	"	617	=
896. Murphy Well				
Well mouth above ocean in feet		••••		• • •
1st SS	250 20	-	250	=
150 150	20 214		270 484	=
2d SS	15		499	=
9	66	"	499 565	=
3d SS., A	20	"	585	=
?	30	"	615	=
3d SS., B	25	66	640	
2	80	"	720	=
4th SS	20?	"	740?	
			•	

GROUP 6.

HYNER, BABBITT, REYNOLDS FARMS.

897. Amazon Well, No. 7.

1865.

Hyner farm, Pithole	. Authority, K	Luhr	ıu.	Kuh	ın,	Supt.	
Well mouth above ocean in	feet					1470	
?							
2d SS	• • • • • • • • • • • • • • • • • • • •	40	"	580	=	890	

?	20	to	600	=	870
3d SS. (upper 30' shelly)	50	"	650	==	820
Slate	5	46	655	=	815
Red rock, estimated	25	**	680	===	790
Slate	62	"	742	=	728
4th SS	25	"	767	=	703
Slatepocket,	11	"	778	=	692

Wet hole. Mud vein at 757'.

898. Amazon Well No. 14

1865.

Authority, Kuhnu Kuhn, Supt. Hyner farm, Pithole. Well mouth above ocean in feet..... 974 530 to 530 = ? (Interval unknown) 30 " 560 = 944 2d SS. (Second Sandstone) 60 " 884 620 ?...... 70 " 814 3d SS..... 690 = 92 " 722 782 = ?..... 20 " 802 = 702 4th SS.....

Wet hole. Mud vein at 793'.

899. Well No. 1.

Babbitt farm, Pithole, situated close to Holmden run, and about five-eighths of a mile from United States well.

Well mouth above ocean in feet,				
Drive pipe		to		=
Rock	60	66	87	=
Slate and SS., dark (2' crevice and heavy gas				
vein)	40	"	127	=
Slate, dark, (heavy water course 257')	130	"	257	=
Slates of different kinds (gas)	23	"	280	=
2d SS., white	25	"	305	==
Slate, hard	40	"	345	==
Slate, soft and red	10	"	355	==
SS., coarse dark pebble, intermixed with slate,	45	"	400	=
Soapstone	30	**	430	=
Slates of different kinds	121	"	551	=
3d SS	20	66	571	=
Slate	40	"	611	==
Slate, soft and red (mud vein 1')	11	**	622	==
Slate, with occasional layers of SS. 6" to 1'	78	"	700	==
Slate	28	66	728	==
4th SS	6	"	734	==
Slate	9	"	743	=

This well was unproductive, and evidently has not reached the 4th SS. of Pithole flats. S.Minor.

900. Well No. 41.

Reynolds farm, Pithole. Situated one-fourth mile below United States well, 40 rods from Pithole creek and 67 feet above the surface of the creek. Record commences at bottom of 4th sand at 731'.

Well mouth above ocean in feet				
? (Interval unknown)				
7				
5th SS. (Fifth Sandstone)	18	"	836	=
7	46	66	882	=
6th SS	20	"	902	=
•	38	"	940	=
7th SS	30	"	970	=
?	32	66	1002	

Crevice and oil show at 980', and strong gas vein at 990'.

GROUP 7.

DAWSON FARM.

(3 wells.)

901. Hoosier Well.

Dawson farm, Pithole creek, 1 mile above Pithole City.

					•	
Well mouth above ocean in feet					1363	
?	124	to	124	=	1239	
1st SS	24	4.6	148	=	1215	
?	209	"	357	=	1006	
2d SS	40	"	397	=	966	
?	60	"	457	=	906	
3d SS	30	"	487	=	876	
?	108	"	595	=	768	
4th SS	20	66	615	=	748	
?	24	"	639	=	724	
5th SS	20	"	659	=	704	
? pocket,	4	"	663	=	700	
FT13 77	~			-	_	

The well was tested at 615' and 633', but produced no oil. It was drilled to 643' and again tested, producing considerable oil, but when completed the former production was doubled.

Two other wells near this give a thickness of 14' and 22', respectively, to the 4th SS

10—I.I.

902. Well No. 25.

Dawson farm, Pithole; on Dawson run, half a mile east of Pithole creek at Dawson Centre, and about 150' above level of the creek.

Well mouth above ocean in feet			• • • • •	
Drive pipe	36	to	36	=
? (Interval unknown)	131	44	167	==
1st SS. (First Sandstone)estimated	20	"	187	==
?	291	44	478	===
2d SS	25	"	503	==
?	75	66	578	=
3d SS	18	"	596	==
9	89	"	685	==
4th SS	2	46	G87	=
?	53	61	740	=
5th SS	18	"	758	=
? pocket,	7	"	765	=

Wet hole. Seed bag first at 498' and afterwards at 580'

903. Ripley Well.

Dawson Farm, Pithole; Burtis, Hart & Burrows tract.

Well mouth above ocean in feet				
?	125	to	125	==
1st SS	25	66	150	=
7	198	"	348	==
2d SS	47	"	395	=
?	45	• (440	==-
3d SS., show of oil	35	"	475	==
?	25	41	500	==
4th SS., show of oil	18	"	518	=
?	77	"	595	=
5th SS	23	"	618	=
7	14	66	632	==

Wet hole. Mud vein at 612'. Seed bag at 360'. Bottom of tubing at 304'.

GROUP 8.

MINOR FARM

Six wells on the S. Minor farm, (formerly the north half of of J. N. Tyrrell's farm,) half a mile south of the Farmer's

hotel, on the Titusville and Pithole Plank Road, and three miles southeast of Pleasantville.

904. Well No. 4.

Well mouth above ocean in feet			. .	
Drive pipe	12	to	12	=
SS., gray	12	66	24	=
Clay, yellow	5	"	29	=
Slate, soft and hard alternating	25	"	54	=
? (Interval unknown)	157	"	211	=
1st SS. (First Sandstone)	40	"	251	=
?	186	"	437	==
2d SS	30	46	467	=
?	68	66	535	==
3d SS	19	"	554	===
?	36	"	590	=
4th SS	19	"	609	===
?	76	66	685	=
5th SS., nearly all pebbles	13	"	698	=
•	3	66	701	=

Water at 40'. Mud, 1 foot, at 543'; 1 foot again at 600' and 2 inches at 690'. Crevice at 692'.

905. North Well, Lot No. 14.

Well mouth above ocean in feet				
Casing	57	to	57	==
?	371	46	428	=
2d SS	20	"	448	=
?	72	66	520	=
3d SS., A	25	"	545	=
?	35	"	580	
3d SS., B	20	46	600	=
7	81	66	681	=
4th SS	10	66	691	==
?	29	22	720	==
5th SS	8	"	728	==
? pocket,	8	44	736	~

906. South Well, Lot No. 19.

On the bank of Dunham run, a branch of East Pithole creek.

Well mouth above ocean in feet				
Casing	59	to	59	=
? (including 1st SS.)	371	46	430	=
2d SS	25	46	455	=
?	70	11	525	=
3d SS., A	25	66	5 50	
?			580	
3d SS., B	20	44	600	=

?	74	to	674	=
4th SS	13	"	687	
9	25	"	712	==
5th SS	10	"	722	=
? pocket.	10	"	732	_=

Size of hole, 6 inches to the depth of 436'; $5\frac{3}{4}$ inches to near the bottom, and $5\frac{1}{3}$ inches at the bottom.

907. Well No. 31.

Well mouth above ocean in feet	*		••••	•••
Soil	15	to	15	==
SS., loose	8	"	23	==
Clay	5	"	28	==
Slate	188	"	216	=
1st SS. (First Sandstone)	10	"	226	==
? (Interval unknown)	207	"	433	=
2d SS	15	"	448	=
?,	76	"	524	=
3d SS., A	28	"	552	=
7	32	"	584	=
3d SS., B	12	16	596	=
9	79	"	675	=
4th SS	15	"	690	=-
? pocket,	10	66	700	=

Seed bag at 440'. Well mouth about 20' above the creek.

908. Well No. 34.

Well mouth above ocean in feet				
Conductor	23	to	23	=
?	187	"	210	=
1st SS	25	"	235	=
7	197	"	432	=
2d SS	30	"	462	=
?	65	"	527	=
3d SS., A	25	66	552	=
?	30	"	582	=
3d SS., B	18	"	600	==
? (soft and hard gray shells)	77	"	677	
4th SS	10	**	687	==
? pocket,	10	"	697	==

Mud vein at 594'. Soft and hard gray shells for 20' above 4th SS.

909. Well No. 47.

Well mouth above ocean in feet				
?				
1st SS., estimated	25	"	235	=
?				

2d SS., estimated			462 524	
3d SS., A, estimated	-		549	
?	33	46	582	=
3d SS., B., estimated	18	4.5	600	=
?	87	"	687	=
4th SS	10	"	697	=

Seed bag at 434'. Mud vein at 683'.

910. Well No. 34.

Second National Petroleum Co. South half of J. N. Tyrrel farm and adjoining S. Minor farm.

Well mouth above ocean in feet			.	
? (Interval unknown)	175	to	175	=
1st SS. (First Sandstone)	25		200	=
?	220	"	420	=
2d SS	31	"	451	==
?	59	"	510	=
3d SS	10	**	520	=
?	33	"	553	=
4th SS	17	46	570	==
?	70	"	640	==
5th SS	18	"	658	=
?	26	"	684	=
6th SS	11	"	695	
? pocket,	9	"	704	=
- ·				

[This record seems to be from memory, as all the measurements to top of sands are qualified by the word "about," but the *thickness* of each sand is given without qualification.]

GROUP 9.

KEEP (BEAN); J. N. TYRREL, FARMS; &C.

911. Downs Well,

Keep or Bean Farm, 3 miles south-east of Pleasantville, and $\frac{1}{2}$ mile south of Farmer's hotel, on bank of Dunham run, about 50 rods west of J. N. Tyrrel farm.

Well mouth above ocean in feet					
?	206	to	206	==	
1st SS	20	66	226	=	

9	204	to	430	=
2d SS	10	"	4 40	=
Ŷ	140	"	580	=
3d SS	10	"	590	=
Ŷ	90	"	680	=
4th SS. (crevice of 3 feet)	20	"	700	=
? pocket,	20	"	720	=

912. M' Nair Well.

J. N. Tyrrel farm, 3 miles south-east of Pleasantville.

Well mouth above ocean in feet				
? (Interval unknown)	225	to	225	=
1st SS. (First Sandstone)	12	61	237	_
9	223	"	460	=
2d SS	18	"	478	=
?	50	"	528	=
3d SS	25	"	553	=
9	132	и	685	=
4th SS	16	"	701	==
9	29	"	730	==
5th SS	18	"	748	=
9	87	"	835	==
Shell	5	"	840	==
? pocket,	10	"	S 50	=

913. Pine Shade Well.

Young farm, 3 miles south-east of Pleasantville, situated about 20 rods below J. N. Tyrrel farm, on Tyrrel run, Allegheny township.

Well mouth above ocean in feet				
?	164	to	164	==
1st SS	56	66	220	=
• •	260	"	480	==
Flint, estimated	2	"	482	=
?	8	"	490	=
Red shale, estimated	10	"	500	=
9	30	"	5 30	=
3d SS	23	"	553	=
? pocket,	2	46	555	=

Large water vein at 170'. Good show of oil at 409'. Mud vein and show of oil at 550'.

In pumping the gas would cause water to flow out. The seed bag burst before the water was exhausted and the well was abandoned.

914. Genesee and Venango Oil Co. Well.

At Howarth's mill, 4 miles south-east of Pleasantville.

'Well mouth above ocean in feet				
? (Interval unknown)	120	to	120	=
1st SS. (First Sandstone)	17	"	137	
?	218	"	355	==
. 2d SS	25	"	380	=
7	74	"	454	==
3d SS	25	46	479	==
?	119	"	598	==
4th SS	8	"	606	=
? pocket,	14	"	620	=

Water was struck at 117' and flowed at the rate of 2,000 gallons per day.

A crevice of 15 inches in 4th SS. Gas and some oil.

GROUP 10.

MISCELLANEOUS.

(Authority, S. Minor.)

915. Brown Well,

West Pithole creek, 2 miles above Paxton house.

Well mouth above ocean in feet	• • • • • •			
Drive pipe	60	to	60	=
7,	240	66	300	==
Tst SS	15	41	315	=
?	135	**	450	==
.2d SS	18	"	468	==
?	187	46	655	=
-3d SS	22	66	677	=
? (including 4th and 5th SS.)	173	"	850	=

Slate, mud veins and soapstone between 4th and 5th SS.

916. Well at the Bridge.

Cherry run, north side of Franklin and Warren pike, near Prather homestead, Plumer.

Well mouth above ocean in feet					1293
?	170	to	170	=	1123
ilst SS					1099

?	204	to	398	=	895
2d SS	70	"	468	=	825
?	34	"	502	=	791
3d SS	30	"	532	=	361

917. Second National Petroleum Co. Well.

Duncan and Prather farm, Cherry run near Plumer.

Well mouth above ocean in feet				
Drive pipe	45	to	45	=
SS	12	46	57	=
Soapstone	170	"	227	=
SS	105	"	332	=
Soapstone	18	"	350	==
1st SS. (First Sandstone)	25	"	375	==
? (Interval unknown)	85	"	460	==
2d SS	30	64	490	=
?	120	"	610	=
3d SS	20	"	630	=
?	110	"	740	=
4th SS	5	"	745	=
?	120	"	865	=
5th SS	35	"	900	=
9	30	"	930	=

Little show of oil in each SS. except the 3d SS.

Mud vein just above 3d SS.

Well tubed to 5th SS. and seed bagged at 620'.

At 145' water was struck.

At 195' show of oil.

918. Duncan Well.

G.S. Duncan farm between Plumer and Pithole. Authority, one of the drillers.

Well mouth above ocean in feet				
?	340	to	340	=
1st SS	20	"	360	=
9	200	"	560	=
2d SS	65	"	625	=
?	35	"	660	=
Stray SS	23	"	683	=
?	34	"	717	=
3d SS	25	64	742	=
?	58	"	800	=
Stray SS	15	66	815	=
?	45	44	860	=
Green oil SS	5		865	=

919. Phillips Well.

Duft tract, Rynd farm, on Cherry Run, 1½ miles above Rouseville. Well situated close to north side of road, and about 15 rods up the run from the Reed well.

Well mouth above ocean in feet					
? (Interval unknown)	250	to	250	===	
1st SS. (First Sandstone)	25				
?	115	"	390	=	
2d SS	25	44	415	=	
7			535		
3d SS. (small crevice near the top)	30	44	565	=	

About 35' above the 3d SS. is a gray sand, say 10' thick.

The well was pumped for three days with little show of oil. The sucker rods were then pulled, and the water rose and flowed over the tubing. The water continued to rise and fall several times, bringing up at one time oil, then mud and more oil, until finally, in about six hours, mud, water and oil were forced to the top of the derrick and covered the side and windows of a house near by.

The well has continued to flow oil since at the rate of from 200 to 300 barrels per day. The flow is very steady, with hardly any pulsations.

The "Fry" well, about 50 feet south of the "Phillips," had been flowing 40 or 50 barrels for four or five months, but suddenly stopped when the latter began flowing. The "Fry" was then pumped, when it produced as much as before, and flowed with considerable force at intervals of twenty minutes.

920. Rondout Well.

On bank of Cherry Tree run, about 1 mile from its entrance into Oil creek.

Well mouth above ocean in feet				
?	390	to	390	=
1st SS	40	"	430	=
?	35	""	465	==
2d SS	35	"	500	=
7	128	"	628	=
3d SS	25	"	653	=
Slate and soapstone	248	44	901	=

Little oil, but plenty of gas.

921. Well No. 2.

Tarr, Story and Cherry Run Oil Co., north side of Pithole road.

Well mouth above ocean in feet		. <i></i> .		
? (including 1st SS., 30' thick)	343	to	343	=
2d SS. (water)	22	44	365	\Rightarrow
? (Interval unknown)			598	
3d SS			634	
? pocket,	26	"	660	==

Below the 3d SS. the reamer could not be used, on account of the abundance of soft rock.

922. Watson Well. 1873.

Irwin farm, on Cherry Tree run, 2 miles north-west of Petroleum Centre. Authority, Jonathan Watson.

Well mouth above ocean in feet				
?	120		120	
Mountain SS	60	66	180	=
?	190	"	370	=
Ist SS	55	"	425	=
?	225	"	650	=
Stray SS	8	"	658	=
n	12	"	670	==
3d SS	15	"	685	=
?	85	"	770	=
Red rock	35	"	805	=
2	145	"	9 50	=
Red rock	10	"	960	-
?	50	"	1010	=

No oil found below the 1st SS.

GROUP 11.

WEST HICKORY.

The wells of this group are on West Hickory creek, Stewart's run, Allender run, &c., and the authority for the records is Mr. S. Minor.

Six Manross farm wells, on West Hickory creek, about 2 miles from the Allegheny river.

923. Well No. 3, near Saw Mill.

925. Well 190.5 , n	ear Saw 1	mu		
Well mouth above ocean in feet	• • • • • • • • • • •			
? (Interval unknown)		to	60	=
1st SS. (First Sandstone)	6	44	66	=
?	16	"	82	_
2d SS		"	90	=
? (good show of oil at 120')	30		120	=
		"		
3d SS		"	137	=
1			162	=
4th SS	8	66	170	=
? (good show of oil at 225)		"	225	=
5th SS		"	237	=
?		"	325	=
Very soft rock	78	"	403	=
924. Well I	N70 1			
Well mouth above ocean in feet				
7	67	to	67	==
1st SS	40	"	107	=
?		"	125	=
2d SS		"	138	=
7		"	169	=
3d SS		"	184	=
		46	224	=
7		"		
4th SS		"	236	=
?	4	••	240	===
925 Well 1	Vo. 7			
East end of flat.				
East end of hat.				
Well mouth above ocean in feet	• • • • • • • • • • •	. .		
Drive pipe	22	to	22	=
Surface SS		"	32	=
?		"	61	=
1st SS.	8	ic	69	=
?		46	78	=
2d SS	••••	"	83	=
9		"	108	=
		66		
3d_SS		"	119	=
7			143	=
4th SS (crevice of 1' at 152)		"	152	=
?		"	160	=
5th SS. (not through)	6	46	166	=
926. Well N	70. 10.			
Well mouth above ocean in feet			••••	•••
Drive pipe		to	10	=
Slate, red	14	"	2 4	=
_	0.0		20	

	,			
?	12	to	81	=
2d SS	36	**	117	=
7	28	66	145	=
3d SS	10	"	155	==
?	35	"	190	=
4th SS. (oil at 195')	16	64	206	=
,				
927. Well No. 17.				
Well mouth above ocean in feet				
? (Interval unknown)			75	
1st SS. (First Sandstone)	35	"	110	==
?	37	"	147	=
2d SS	13	33	160	==
*******************************	30	64	190	=
3d SS., not through.	7	"	197	==
, ,				
928. Well No. 38.				
North of creek, on the flat.				
Well mouth above ocean in feet				
?	35		35	
Ist SS.	62	46	97	==
?	22	"	119	
2d SS. (18" crevice at 123")	4	66	123	

929. Hinkley Well, No. 3.

5 " 128 =

M'Groary farm. Situated $2\frac{1}{2}$ miles west of Allegheny river, and about $5\frac{1}{2}$ miles east south-east from Pleasantville.

Well mouth above ocean in feet				
Conductor			8	
?	87	66	95	==
1st SS	13	"	108	=
?	225	"	333	==
2d SS	20	"	353	=
?	12	"	365	=
3d SS., estimated	10	"	375	=

Amber colored oil; burns in lamp without refining. Comes into the well at 370'.

930. Well No 2.

Situated on Allender run, on west side of Hickorytown road, and two miles west from Allegheny river, and about six miles east south-east from Pleasantville.

Well mouth above ocean in feet			••••	
£	95		95	
1st SS	15	"	110	

?	225	to	335	=	
2d SS	18	"	353	=	
?	47	"	400	=	
Flint, white	5	23	405	=	

At 405' the tools stuck, and the well was abandoned.

931. Fair Farm Well.

On Stewart's run, six miles south-east of Pleasantville.

Well mouth above ocean in feet	••••			
? (Interval unknown)				
1st SS. (First Sandstone)	40	66	134	=
?	210	"	344	=
2d SS	30	46	374	=
?	81	"	455	=
3d SS	20	"	475	=
?	127	66	602	=
4th SS	5	"	607	=

Six White Farm Wells on land of J. White, West Hickory creek, $2\frac{1}{2}$ miles from the Allegheny river and half a mile above the Manross farm.

932. No 8, "Shaw Well.

Well mouth above ocean in feet				
?	102	to	102	=
1st SS., estimated	20	"	122	=
?	25	"	147	=
2d SS., estimated	20	46	167	=
?	173	**	340	=
3d SS., estimated	20	66	360	=
?	192	"	552	=
4th SS	80	66	632	=

Crevices at 387' and 460'. Oil shows at 387', 395', 458', and strong flow of gas at 577'.

933. Gillam Well.

Well mouth above ocean in feet				•••
?	84	to	84	===
SS	8	"	92	===
?	38	"	130	=
SS	11	66	141	=
?	75	66	216	=
SS	17	64	233	==
?	102	"	335	=
SS	20	44	355	=

934. No. 11, Union Well.

٠.,
=
==
=
=
=

Oil was found at 55', 85' and 187'. Production, 10 barrels per day. First quality lubricating oil. Gravity, 29°.

935. No. 6, "Buckhorn Run Well."

Well mouth above ocean in feet				
?	115	to	115	=
1st SS	90	"	205	=
?	161	"	366	-
2d SS	22	"	388	=

This well produced nothing.

936. No. 19 Well.

On the flat.

Well mouth above ocean in feet				
?	98	to	98	=
1st SS	29	"	127	=
2	28	"	155	=
2d SS	38	"	193	==
?	17	"	210	=
3d SS	59	"	269	=
?	9	"	278	=

Production, 5 to 10 barrels per day of lubricating oil, with much water.

937. No. 37 Well.

î	75	to	75	=
1st SS	27	"	102	=
?	28	"	130	=_
2d_SS	13	"	143	=
?	39	"	182	==
3d SS	18	"	200	==
?	32	"	232	=
4th SS	12	"	244	=
?,	76	"	320	=
5th SS	15	"	335	=
?	68	"	403	=

Five wells on farm of "West Hickory Oil and Mining Co.," at the junction of West Hickory creek with the Allegheny river.

938. Well No. 2.

On bank of West Hickory creek, 1 mile from Allegheny.

6	46	15	=
20	"	35	=
13	44	48	=
17	"	65	==
19	٤٤	84	=
2	"	86	=
4	"	90	=
5	"	95	=
6	"	101	=
11	"	112	=
	9 6 20 13 17 19 2 4 5	9 to 6 " 20 " 13 " 17 " 19 " 4 " 5 " 6 "	20 " 35 13 " 48 17 " 65 19 " 84 2 " 86 4 " 90 5 " 95

Seed bag at 10' from bottom.

Crevice of 18 inches and oil in last sand.

Well flowed for some time and produced quite a large amount of lubricating oil.

939. Well No. 3.

About 40 rods north-east of No. 2.

Well mouth above ocean in feet		· · · ·		•••
Conductor	13	to	13	=
Flag	31	**	44	=
1	31	"	75	=
1st SS	8	"	83	=
7	9	66	92	=
2d SS., white	2	46	94	=
7	34	""	128	=
3d SS	26	**	154	=
·	255	"	409	=
4th SS., gray	16	"	425	=
5th SS., of all kinds	42	"	467	=
?	22	"	489	=
6th SS., of all kinds	11	**	500	=
	46	46	546	==
7th SS	151	66	5612	=

940. Well No. 4.

160	TT.	OTT.	WET.T.	RECORDS.	χ	F.	CARLL	1877	<i>r</i> _
1.00	1.1.	ULL	AA 131717	v_{rr}		r.	CAIVILL	101	•

,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	15	to	15	=
\$S	47	"	62	=
	6	"	68	=
\$S	33	"	101	=

941. Well No. 5.

Situated about 40 rods above No. 4 and 85 rods above No. 3, under the bluffs.

Well mouth above ocean in feet				
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	82	to	82	=
SS	13	66	95	=
9	15	66	110	=
SS	3	"	113	=
?	10	"	123	=
SS	17	"	140	=
?	32	66,	172	=
SS	12	""	184	=

942. Well No. 6.

Under same bluffs as Nos. 2 and 4, and about 20 rods above No. 5, on south side of creek.

Well mouth above ocean in feet	• • • • •			
?	52	to	52	=
SS	34	"	86	=
?	10	46	96	=
SS	40	"	136	=.
•	14	"	150	-
SS	7	66	157	مستا
?	4	66	161	-
SS	18	66.	179	-87.
?	25	66	204	-
SS	14	"	218	-

GROUP 12.

GREAT REPUBLIC.

The following six wells on the Great Republic Oil Company's tract are on Upper Cherry run, Oil Creek township, Venango Co., 4 miles south-west of Pleasantville:

943. Lambert Well No. 3.

Authority, Jonathan Watson.

Well mouth above ocean in feet					
Drive pipe		to		==	
SS., with large water course	9	"	57	=	
Soapstone	143	"	200	==	
Hard slate	33	• •	233	==	
Streak of soapstone and slate	35	"	268	=	
SS	5	"	273	_	
Hard slate	25	46	298	=	
Soapstone, muddy	24	"	322	=	
Hard I lue slate	58	66	380	=	
Purple slate	58	46	438	=	
Slate	39	"	477	==	
SS. (strong smell of oil)	9	66	486	=	
Soapstone	11	66	497		
Soapstone and SS	49	"	546	=	
Hard slate, mud vein	4	"	550	=	
Soapstone and slate	25	"	575	=	
SS., small pebbles	9	"	584	=	
Hard blue slate and SS	7	"	591	=	
Soapstone, very muddy	28	"	619	=	
White SS	22	"	641	=	
Soapstone	77	"	718	=	
Yellow pebbles	3	"	721	=	
Dark gray SS	15	"	736	=	
Soapstone	19	"	755	=	
Pebbly SS	15	"	770	=	
Soapstone and slate	30	66	800	=	

944. Bunker Hill Well.

Authority, Jonathan Watson.

Well mouth above ocean in feet				
Drive pipe	113	to	113	==
SS., light brown	14	66	127	=
SS., white	9	"	136	=-
SS., dark blue	4	46	140	=
SS., light gray	9	66	149	=
Slate rock	15	"	164	=
SS., light gray	8	"	172	=
Slate and soapstone rock	89	"	261	
Slate, hard	14	"	275	
Slate, soft	10	**	285	=
Slate, hard	20	"	305	=
\$S	9	EE	314	=
Slate	26	46	340	==
Slate streaked with SS	29	"	369	=
Soapstone	7	66	376	=-
Slate, hard	48	44	421	=

	29	to.	453	
Slate, red				
Slate, hard blue	23	"	476	
Slate, red	16	"	492	==
SS	3	4.6	495	=
Slate, hard	35	66	530	=
Siale, marq	40	46	570	
SS., dark		66		
Slate	14		584	
Soapstone	26	66	610	==
SS. (good show of oil)	14	"	624	==.
BB. (good allow of on)	36	66	660	
Soapstone, mud vein			692	
SS., fine and white	32			
Soapetone	59	66	751	==
Slate	23	"	774	==
SS., dark	10	66	784	=
ON-, UALE	9	16	793	-
Slate	2	£ 6		_
SS	_		795	-
Slate and soapstone	11	"	806	
SS., pebble	9	"	815	=
Manuales a	1	66	816	
Soapstone	-		020	

945. Well No. 1.

1869.

Authority, James Pettigrew, Supt.

- · · · · · · · · · · · · · · · · · · ·				
Well mouth above ocean in feet				•••
Drive pipe			45	
Mountain SS	84	4.5	129	=
Slate, shelly	140	**	269	=
SS., white and hard	30	46	299	=
Slate, blue and purple	203	46	502	==
2d SS	45	"	547	=
Slate and soapstone	98	í e	645	=
3d SS	27	**	672	==
Soapstone	69	4.6	741	=
4th SS. (oil near the top)	14	**	755	==
Slate	29	"	784	=
5th SS. (no oil)	17	4.6	801	==
Slate pocket,	9	"	810	==

Cased at 432'. Best production, 9 barrels per day. Black oil.

946. Well No. 2

1869.

Authority, Jas. Pettigrew, Supt.

Well mouth above ocean in feet				•••	
Drive pipe	40	to	40		
Sandstone	80		120	=	
Slate, hard	141	46	261	=	

1st SS	29	to	290	=
Slate and soapstone	204	"	494	=
2d SS	30	"	524	=
Slate, blue and purple	109	"	633	=
3d SS	30	"	663	=
Slate	71	"	734	=
4th SS. (01l)	12	46	746	=
Slate	31	44	777	<u>.</u>
5th SS. (oil)	14	"	791	
Slate	39	"	830	=

Production, 5 barrels per day, of mixed oil, part black, part green.

947. Well No. 3.

March, 1870.

Authority, Jas. Pettigrew, Supt.

Well mouth above ocean in feet				
Drive pipe (8'')			41	
Mountain sand	84	"	125	=
Slate, hard	129	"	254	=
Sandstone, very hard	20	46	274	=
Soapstone (blue) and purple slate	215	44	489	=
2d SS	14	44	503	=
Slate	18	46	521	=
Sand (extra)	10	**	531	=
Slate, shelly	98	44	627	=
3d SS	23	44	650	=
Slate, hard streaks	77	46	727	=
4th SS (gas)	13	"	740	=
Slate, hard	28	"	768	=
5th SS., pebbly	18	" "	786	=
Slate, black	11	"	797	=

Cased at 397'. Production, 30 barrels per day of green oil for a short time.

948. Well No. 4.

Authority, Jas. Pettigrew, Supt.

Well mouth above ocean in feet					
Drive pipe	48	to	48	\Rightarrow	
Mountain sand	82	"	130	==	
Slate			268		
1st SS	18	"	286	=	
Slate, blue and purple	218	**	504	=	
2d SS	12	"	516	=	
Slate, blue and hard	10	"	526	=	
Sand, dark (salt water and oil show)	10	**	536	=	

A64 I.I. oil Well Records. J. F. Carll, 1877.

Slate, blue and purple, soft	107	to	643	
3d SS. (green oil)			669	
Slate and soapstone			742	
4th SS			758	
Slate			784	
5th SS. (good show of green oil)				
CTI - A -			799	
Diago	9	6.5	808	

CHAPTER VI.

OIL CREEK.

GROUP 1.

CALDWELL FARM.

(5 wells.)

Wells on the Caldwell farm, Oil creek, near Pioneer. Authority, Mr. Chapin, Superintendent in 1870.

949. Well No. 4, Lease No. 12.

Well mouth above ocean in feet				
? (Interval unknown)			212	
1st SS. (First Sandstone)estimated	15			
?	115	66	342	=
2d SS., estimated	25	44	367	==
?	110	44	477	=
Stray SS., estimated	10	46	487	=
?	5	**	492	=
3d SS., estimated	40	"	532	=

Wet hole. Black oil in the stray SS. This well was about 60' above the "flats" of Oil creek on which No. 18 was located.

950. Well, Lease 18.

Near the creek.

Well mouth above ocean in feet				•••
?	158	to	158	\Rightarrow
1st SS., estimated	15	66	173	=
9	123	"	296	=
2d SS., estimated	25	"	321	==
?	74	"	395	=
Stray SS	6	66	401	=
9	30	**	431	=
3d SS., estimated	40	44	471	=

Wet hole. Green oil.

951. Lower Craft Well, Lease No. 16.

Well mouth above ocean in feet	• • • • •			
? (Interval unknown)	214	to	214	=
1st SS. (First Sandstone)estimated	15	66	229	=
8	121	"	350	=
2d SS., estimated	25	66	375	=
? (including stray)	109	* *	484	=
3d SS	16	46	500	=

Wet hole. Produced at first testing at the rate of 30 barrels per day, but apparently clogged with mud and stopped pumping. After standing still a long time in this shape it was finally abandoned without further test. This well was about 53' above No. 18.

952. Upper Craft Well, Lease No. 15.

Well mouth above ocean in feet				
•	275	to	275	==
1st SS., estimated	15	**	290	=
	120	**	410	=
2d SS., estimated	25	"	435	=
	110	"	545	=
3d SS., not through	15	"	560	=

Wet hole. Elevation about 115' above No. 18

953. Autumn Well or "Mary Ann." 1869.

Situated on gore lease No. 17, Caldwell farm. Authority, Mr. Schuyler, owner.

Well mouth above ocean in feet				
Drive pipe	35	to	35	=
9	132	66	167	=
1st SS	16	EE	183	=
7	121	26	304	=
2d SS	24	66	328	=
?	76	66	404	
Stray SS	10	"	414	=
7	22	66	436	=
3d SS., not through the sand	41	66	477	=

Wet hole, $5\frac{1}{4}$ diameter. Cased at ———. Gas and oil at 440' and 468'. Elevation about 9' above No. 18.

This well on the first test, which was very thorough and protracted, produced nothing but water. It was abandoned and lay idle for about one year, everything about the well remain-

ing just as when the pump stopped. At the end of that time it changed hands, and the purchasers filled the boiler, fired up and started the walking-beam, when the well immediately pumped six barrels of black oil. It then commenced to pump brackish water at the rate of about 200 barrels per day. This continued about 12 hours, when a scum of green oil appeared which increased in the next 24 hours to 15 barrels per day. After this the well would produce about 15 barrels of oil and 200 barrels of water per day if pumped very rapidly (say 130 strokes per minute), and not more than 5 or 6 barrels of oil if run at the rate of 80 strokes per minute. The fast motion constantly broke the machinery, and the well was not a financial success. As a last resort a torpedo was exploded in the 3d SS., which brought the production up to 60 barrels. At the end of a month it had decreased to 20 barrels, but a torpedo again brought it up to 50 barrels. This process was repeated monthly for about a year, when the oil failed in consequence of the flooding of other wells on the flat with which this was undoubtedly connected. The pumping of these wells on the flat during the year the Mary Ann was idle explains the mystery of its producing oil after having been abandoned as a flooded well.

CHAPTER VII.

Titusville, Pine Creek and Church Run.

Records of 8 oil wells on the Parker farm, Titusville, furnished by the owner, Jonathan Watson.

954. Logan Well.

954. Logan Well.				
Well mouth above ocean in feet				
? (Interval unknown)			708	
3d SS. (Third Sandstone)estimated	50	"	758	==
?pocket.	17	66	775	==
,				
955. M'Cambridge W	τ_{cll} .			
Well mouth above ocean in feet				
?			189	
1st SS. (estimated)	30	"	219	=
?	179	66	398	
2d SS	22	"	420	==
?(including 3d SS.)	81	"	501	=
956. Parker Well, No				
Well mouth above ocean in feet				
?	450			
1st SS., estimated	20	"	470	
?	199	"	669	
2d SS	43	**	712	
?	2	"	714	
3d SS	55	"	769	
?	55	•••	7741	
957. Parker Well, No	. 3.			
Well mouth above ocean in feet				. 1533
Drive pipe				

1st SS. 18 to 488 = 1044 ? 202 " 690 = 842 2d SS. 38 " 728 = 804 ? 2 " 730 = 802 3d SS. 58 " 788 = 744 ? pocket, 2 " 790 = 742
958. Parker Well, No. 4. Well mouth above ocean in feet. ? (Interval unknown). 697 to 697 = 3d SS. (Third Sandstone) 61 " 758 =
959. Parker Well, No. 8. Well mouth above ocean in feet. Drive pipe. 27 to 27 = ? 285 " 312 = !st SS. 30 " 342 = ? 188 " 530 = 2d SS. 40 " 570 = ? 1 " 571 = 3d SS. 45 " 616 = Drilled dry. Cased at 190'.
960. Parker Well, No. 9. Well mouth above ocean in feet. ? (including 1st SS.)
961. Parker Well, No. 10. Well mouth above ocean in feet. ?

962. Sadorus Well, No. 1.

Sadorus farm, Pine creek, 2 miles east of Titusville. Authority, Jonathan Watson.

Well mouth above ocean in feet					
Drive pipe	36	to	36	-	
? Interval unknown)	140	"	176	=	
1st SS. (First Sandstone)	28	"	204		
?	180	"	384	=	
2d SS	15	66	399	=	
?	13	"	412	=	
3d SS.	18	"	430	=	

963. Duncan Well, No. 3.

Duncan farm, Pine creek, 2 miles east of Titusville. Authority, Jonathan Watson.

Well mouth above ocean in feet				
7				
Ist SS	35	"	290	=
?	205	"	4 95	==
2d SS	10	66	505	=
7	31	"	536	=
3d SS	27	"	563	=

964. Duncan Well, No. 6.

Duncan farm, Pine creek, 2 miles east of Titusville. Authority, Jonathan Watson.

Well mouth above ocean in feet				
7				
1st SS			247	
***************************************	229	"	476	=
3d SS	61	"	537	=

965. M' Cort, No. 5.

M'Guire farm, Church run. Authority, John M'Cort.

Well mouth above ocean in feet		.			1604
Drive pipe					
?					1144
Ist SS		"	500	=	1104
******************************	210	"	710	==	894
2d SS	15	"	725	=	879
• • • • • • • • • • • • • • • • • • • •	25	"	750	=	854
3d SS	64	"	814	=	790

966. Orleans Well.

Weed farm, Church run. Aut	nority, Jonathan Watson.
----------------------------	--------------------------

Well mouth above ocean in feet					
'? (Interval unknown)	364	to	364	==	
1st SS. (First Sandstone)estimated		"	404	=	
?	193	"	597	=	
2d SS. (estimated)	18	"	615	==	
?	8	"	623	=	
3d SS	75	"	698	==	

967. Mount Hope Well.

Barnsdall farm, Church run. Authority, Jonathan Watson.

Well mouth above ocean in feet			• • • • •	
2	463	to	463	<u>-</u>
Ist SS. (estimated)	40	**	503	=
?	169	٤٤	672	=
2d SS. (estimated)	18	66	690	=
7	15	66	705	=
3d SS,.	62	66	767	==

968. Peninsular Oil Co.'s Well.

On the C. A. Davidson tract, Gilson run, or north branch of Hyde creek, about 3 miles north-north-west of Titusville. Authority, S. Minor.

Well mouth above ocean in feet				
Drive pipe	32	to	32	=
Soapstone	230	66	262	=
Red rock		"	272	=
Soapstone	35	"	307	=
Sandstone, white	20	"	327	=
Soapstone	205	"	532	=
Sandstone	21	"	553	=
Soapstone	29	"	582	=

Wet hole. Fresh water crevice at 80'. Gas in bottom of red rock at 272', and again at 295'. Gas, salt water and some oil in the last sandrock.

969. Vine Hill Well.

1870.

At Grey's Mills, Oil Creek township, Crawford county, six miles north-west of Titusville. Authority, J. S. Grey.

Well mouth above ocean in feet				• • •
Drive pipe	47	to	47	=

Sandstone, shaly	30	to	77	
Shale, blue	75	66	152	=
Slate, red	17	"	169	=
"Marine limestone"	25	"	194	=
Shale, blue	64	44	258	=
Sandstone, white	41	"	299	=
Slate, blue	50	"	349	=
Shale, top gray, bottom blue	87	"	436	=
Slate, gray	43	"	479	=
Sandstone, pebbly	12	66	491	=
Shale, gray and sandy, with fossil shells	75	"	566	=
Shale, blue and flinty	30	"	596	=
Shale, red, mixed with blue slate	375	66	971	=

Although this well was not "dry cased" there was not enough water in the hole to drill with. It was tubed and pumped several weeks, but yielded no oil. After exploding a torpedo in the white sand, at about 280', it produced some gas and perhaps a barrel of oil per day.

970. Morse, Emerson & Joy Well.

M'Knight farm, Church run, two miles north-east of Titusville, Authority, S. Minor.

Well mouth above ocean in feet				
? (Interval unknown)	400	to	400	=
1st SS. (First Sandstone.)	60	"	460	==
?	169	"	629	=
2d SS	15	"	6 44	===
?	15	"	659	=
3d SS	65	"	724	=
? pocket,	12	"	736	=

Production, 75 barrels per day. Mud vein at 694'.

971. Well No. 4.

Guild farm. Situated about 1½ miles east of Titusville and 6 rods south of Plank road. Authority, S. Minor.

? (seed bag at 150')	150	to	150	==
1st SS			175	
?	243	"	418	==
2d SS			458	
? pocket,	33	"	491	=

CHAPTER VIII.

CASHUP

Records of 9 wells belonging to A. H. Bronson, at Cashup, $4\frac{1}{2}$ miles south-east of Pleasantville. Copied from the superintendent's books.

972. Well No. 1.

٠,	. ,, 000 2100 2.
	t
97	3. Well No. 2.
97	4. Well No. 3.
Well mouth above ocean in fee ? 4th SS Slate	
97	5. Well No. 4.
	t

976. Well No. 5.

 Well mouth above ocean in feet
 1657

 ?
 900 to 900 = 757

 4th SS
 16 " 916 = 741

977. Well No. 6.

0 // 600 = 100	
Well mouth above ocean in feet.	1646 755 737
978. Well No. 7.	
Well mouth above ocean in feet	1640
? 886 to 886 =	
4th SS 17 " 903 =	737
979. Well No. 8. Well mouth above ocean in feet. ?	1634 756 738
980. Well No. 10.	

Well mouth above ocean in feet.....

No detailed record was kept of this well, but it was put down, as will be observed by the tide level of the bottom, about 120' below the 4th SS. No sands were found below the 4th, except a band of gray shells at about 945'.

?..... 1020 to 1020 = 619

981. Holmes & Brown Well, No. 1.

1871.

East end of Harsh tract, Cashup, 4½ miles south-east of Pleas-antville. Authority, A. W. Brown.

Well mouth above ocean in feet					1611
?					1254
1st SS.					1220
					1016
?					
2d SS			020		993
7					911
Stray 3d SS	20	6.6	720	=	891
?	16	"	736	==	875
3d SS	38	"	774	==	837
?	71	"	845	==	766
4th SS	25	"	870	=	741
? pocket,	13	"	883	==	728

Drilled dry. This was the first well put down at Cashup. It was a little north of the best producing territory as afterwards

developed. It commenced pumping at the rate of 4 or 5 barrels per day, gradually increasing to 20 barrels, and then running down quickly to almost nothing when the wells on the centre of the deposit began to exhaust the oil.

982. Kratzer Well, No. 1.

Brown lease, Cashup, 4½ miles south-east of Pleasantville, Authority, P. Kratzer.

Well mouth above ocean in feet		<i>.</i> .			1614
? (Interval unknown)					1024
2d SS. (Second Sandstone)	25	"	615	=	999
7	70	44	685	=	929
3d SS. (in two members)	88	"	773	=	841
?	72	"	845	=	769
4th SS. (5' of top gray)	21	"	866	=	748
? pocket,	11	££	877	=	737

983. M'Laughlin Well, No. 1.

1871.

Cashup, $4\frac{1}{2}$ miles southeast of Pleasantville. Authority, T. M'Laughlin.

Well mouth above ocean in feet					1640
7	178	to	178	=	1462
Mountain SS., estimated	40	"	218	=	1422
?	378	"	596	=	1044
2d SS	65	"	661	=	979
? (including some red rock)	190	"	851	=	789
Black sand and slate	10	66	861	===	779
4th SS	30	"	891	=	749

Drilled dry. Cased at 224'.

Heavy flow of gas in 2d SS. Production, about 1,000 barrels per day for a short time. The Cashup pool of oil proved to be small, and all the wells soon settled down to small pumpers.

984. Harsh Well, No. 6.

Harsh tract, Cashup, 41 miles south-east of Pleasantville.

Well mouth above ocean in feet			• • • • •		1569	
T	325	to	325	=	1244	
SS					1225	
P.,,,,,,,,,,	214	"	558	=	1011	

SS. (Sand	istone)		36	to	594	=	975
	rval unknown)		64	44	658	=	911
ss`	1	(22	**	680	=	889
Slate	2d SS. in 3 members. {		20	66	700	=	869
ss	2d SS. in 3 members. 3	•	10	44	710	=	859
Slate			5	66	715	=	854
SS	İ		20	66	735	==	834
			69	12	804	=	765
3d SS			20	••	824		745

CHAPTER IX.

Tidioute; Triumph; Fagundus; New London; &c.

GROUP 1.

ECONOMY.

Records of 10 wells belonging to the Economy company, situated on various parts of their tract in Limestone township, Warren Co., south of the Allegheny river at Tidioute. Copied by permission from the company's books.

985. Well No. 4.

On the hill 1½ miles south of river.

Well mouth above ocean in feet				• • •
? (Interval unknown)	190	to	190	=
1st SS. (First Sandstone)	20	"	210	=
?	315	"	525	=
:2d SS	35	"	560	=
?	20	"	580	=
Stray 3d SS	16	"	596	=
?	76	"	672	=
3d SS	18	46	690	=
? pocket,	7	"	697	=
Mud at 674' and 680'.				

986. Well No. 6.

On the hill near the river.

Well mouth above ocean in feet				
'Conductor	26	to	26	=
	139	66	165	=
1st SS	8	"	173	=
7	139	"	312	==
2d SS	18	66	330	=
?	78	¢ C	408	=
3d SS	23	46	431	_
12—I.I.				

987. Good Will Well.

301. Wood 11 100 11 C	,,,			
Near the above (No. 6).				
Well mouth above ocean in feet. ? (Interval unknown). Ist SS. (First Sandstone). ? 2d SS. ? 3d SS.	260 10 42 18 79 27	to	260 270 312 330 409 436	
988. Well M, or Gas	Well.	•		
On Dennis run, 11 miles south of rive	r.			
Well mouth above ocean in feet. ?	106 15 79 16 76 6 38 10	to 46 66 66 66 66 66 66 66 66 66 66 66 66	106 121 200 216 292 298 336 346	
The flow of gas comes in the well at 5	11 4 5 19 4 520'.	••	460 465 659	=======================================
Dennis run, ½ of a mile from river. Well mouth above ocean in feet. ? 1st SS., estimated. ? 2d SS. ? Hard shell of sand. ?	50 15 54 9 79 11 652 8 127	to	50 65 119 128 207 218 870 878	
990. Shingle Mill Well, I Lower end of tract No. 5206. Well mouth above ocean in feet.	 166 1	to :	16 6 :	

?	9	to	183	=
2d SS	7	"	190	=
2	10	66	200	=
Stray 3d SS	6	44	206	==
Red rock	5	"	211	==
?	8	44	219	=
4th SS	24	66	243	==
2	28	* *	271	=
5th SS	11	66	282	=
?	117	44	399	=

This well was unproductive.

991. Shingle Mill Well, No. 2.

Five miles east of Tidioute bridge and 2 miles south of river, on Tract No. 5206.

Well mouth above ocean in feet				
? (Interval unknown)	283	to	283	==
1st SS. (First Sandstone)	20	"	303	=
?	35	"	338	=
2d SS	14	"	352	==
?	15	"	367	=:
3d S S	12	44	379	=
?	б	"	385	=
4th SS	9	46	394	=
?	34	"	428	=
5th SS. (mud at 440')	32	"	460	=
?	60	"	520	=
Pebble shell, estimated	3	"	523	==
?	33	"	556	=

992. Centre Well.

On tract No. 5277, 1½ miles south-east of Tidioute bridge.

Well mouth above ocean in feet		. <i>.</i>	••,••	
Conductor	43	to	43	==
?	23	"	66	=
Mountain sand	12	46	78	=
?	295	44	373	=
Red rock	3	66	376	==
1st SS., shelly (estimated)	20	44	396	=
?	57	44	453	=
2d SS. (estimated)	30	44	483	
?	57	"	540	=
3d SS	22	"	562	=

Water at 71'. Oil at 544'. Mud vein at 555'.

993. Well No. 15, A.

One mile from the river.

Well mouth above ocean in feet			••••	•••
? (Interval unknown)	60	to	60	=
1st SS. (First Sandstone)estimated	20	"	80	=
2	314	66	394	=
2d SS	16	44	410	=
?	43	44	453	=
Stray 3d SS			468	
?	76	"	544	=
4th SS	14	66	558	=
?	16	"	574	=

994. "Dry Hole" Well.

1876.

On tract No. 5205, 3\frac{3}{4} miles south-east from Tidioute bridge, and near the Warren and Tionesta road.

Well mouth above ocean in feet				
Conductor	. 27	to	27	=
9	. 503	"	530	==
1st SS., estimated	. 20	46	55 0	=
Red rock	5	"	555	=
?	. 35	"	590	==
Stray 3d SS	30	66	620	=
?	75	"	695	=
3d SS., estimated	. 5	"	700	=
7	43	"	743	=
The 3d SS. was only a thin band of	sandy	sh	ells.	

GROUP 2.

TRIUMPH.

Partial records of some of Radure & Watson's wells on land of Triumph Oil Company, Triumph Hill, Warren county, near Tidioute. Authority, superintendent's books.

995. Lease 126.

Well mouth above ocean in feet				
			698	
3d SS	87	66	785	==

996. Lease 224.

Well mouth above ocean in feet				
?	425	46	425	=
1st SS	25	"	450	==
? (including 2d SS.)	225	"	675	==
3d SS	84	"	759	=

997. Lease 149.

Well mouth above ocean in feet					•
?	700	to	700	=	
3d SS	103	66	803		

On lease 237 the 3d SS. was 106' thick.

On lease 101 the 3d SS. was only 8' thick.

A well drilled 105' below the 3d SS. found only soft drilling the whole distance. No other sandstone discovered.

998. Well No. 49, D.

1866.

N. Y. and Allegheny tract, Deerfield township, Warren county. Authority, William W. Hague.

Well mouth above ocean in feet			
Conductor	8	to	8 =
Slate	23	"	31 =
Sandstone	29	"	60 ==
Slate	115	"	175 =
Sandstone	7	"	182 =
Slate	12	""	194 =
Sandstone	44	"	238 =
Slate	43	"	281 =
Sandstone	29	6.6	310 =
Slate	123	"	433 =
3d SS	113	"	546 =

Wet hole. Cased at 300'. Best production, 150 barrels per day. Gas sufficient to fire 3 boilers. Green oil. Gravity, 47°

GROUP 3.

FAGUNDUS.

Fagundus Farm Oil Company's wells; Fagundus, Warren and Forest counties, 4½ miles south-west of Tidioute. Authority, manager's books.

999. Well, No. 1.

999.	$-W_{\epsilon}$	ell	No.	1.				
Well mouth above ocean in feet.								
? (Interval unknown)							222	
Mountain sand, estimated					30	66	252	
?					443	"	695	=
3d SS. (Third Sandstone)					38	"	733	=
7		. p	ocket	,	11	"	744	=
1000.	We	:W	No.	11.				
Well mouth above ocean in feet					• • • •			
?					465		465	
1st SS					10	"	475	=
?					60	"	535	==
Stray 2d SS					8	66	54 3	=
?					27	"	570	=
2d SS					23	"	593	=
?					25	"	618	=
Stray 3d SS	• • • • •	• • •	• • • • •		32	"	650	=
9	• • • •	• • • •	• • • • •		66 33	"	716 749	===
ou 65	• • • • •	• • •			00	••	143	=
1001.	777-7	7 7	(7. H)	ດ				
		-						
Well mouth above ocean in feet				• • • •				• • •
?	• • • • •		••••	4	90	to	490	=
1st SS., estimated					10	"	500	=
93 60	• • • • •	• • •	• • • • •		65	"	5 65	=
2d SS., estimated	• • • • •	• • •	• • • • •		15		580	=
? Stray 3d SS., estimated	• • • • •	•••	• • • • •		•		637	==
?	• • • • •	• • •	• • • • •		00		667	=
3d SS., estimated	• • • • •	• • •	••••				730 760	=
		• • • •	••••	•	,,,	-	100	
1002. Thorn	berg	1	Vell,	No	. 2			
Bootty farm Form A	£1.	_	٠, ٠		m	7	7	

Beatty farm, Fagundus. Authority, Mr. Thornberg.

THOM MOUNT ADOVE OCEAN IN TEEL					
?	380				
1st SS	10	"	390	==	

?	40	to	430	==	
· 2d SS	30	"	460	==	
9	30	"	490	==	
Stray 3d SS	20	"	510	=	
	70	"	580	=	
3d SS	38	44	618	=	

Thornberg Well No. 1 struck the 3d SS. at 608' and passed through it at 641'=33' thick.

"Red Flag" wells, Scott farm, Fagundus. Authority, the owner.

1003. Well No. 1.

Well mouth above ocean in feet								
? (Interval unknown)	290	to	290	=	1412			
1st SS. (First Sandstone)estimated	10	"	300	=	1402			
?	453	"	753	=	949			
3d SS	29	66	782	=	920			

1004. Well No. 2.

Well mouth above ocean in feet				• • •
9	305	to	305	=
1st SS., estimated	10	"	315	=
?		"	765	=
3d SS	30	"	795	=
? pocket.	8	"	803	

GROUP 4.

CLAPP FARM.

Clapp farm, between New London and Triumph, Deerfield township, Warren county, about 3 miles from Tidioute.

Thickness and depth of third sand, as found in seventeen wells on the Clapp farm. Copied from Company's books.

1005	Well	No.	1	18'	thick;	from	631	to	649	=	1575
1006	46	No.	3	80'	"	"	628	"	658	~	1561
1007	46	No.	8	20'	66	66	697	"	717	=	?
1008	"	No.	15	15'	"	64	712	"	727	==	?
:1009	46	No.	16	25'	44	44	688	46	713	=	1628

1010	Well	No.	17	20'	thick;	from	676	to	696	=	?
1011			18			"	692		706		?
1012	"	No.	31	32'	46	46	713	46	745	=	?
1013	4.	No.	32	41′	44	"	700	46	741	==	?
1014	"	No.	33,	39'	46	44	770	"	809	=	1700
1015	"	No.	34	38′	46	46	793	"	831	=	1729
1016	66	No.	35,	54'	44	"	784	66	838	=	1744
1017	66	No.	43	18'	44	**	714	"	732	=	1648
1018	44	No.	50	46′	66	"	658	"	704	=	1601
1019	"	No.	51	50	66	66	714	"	764	=	1619
1020	44	No.	52	48'	44	66	674	66	722	=	1616
1021	"	No.	53	45′	46	46	662	66	707	==	1603

GROUP 5.

MISCELLANEOUS.

1022. Schmick Well, No. 1.

Irvin farm, between Colorado and New London, Deerfield township, Warren county. Authority, Peter Schmick.

Well mouth above ocean in feet					1519
? (Interval unknown)	155	to	155	=	1364
SS. (Sandstone)	11	66	166	=	1353
?	234	*6	400	=	1119
SS	10	66	410	=	1109
•	80	66	490	==	1029
Ss	15	"	505	=	1014
?	25		530		989
SS	20	66	550	==	969
?	80	66	630	==	889
SS	45	"	675	=	844
? pocket,	15	"	690	=	829

Drilled dry. A good well, as were all others in this vieinity.

1023. Neill Well.

South-east corner of South-west township, Warren county, on the hill between Neilltown and Funk's Mills, and $1\frac{1}{2}$ milesnorth of Neilltown. Put down about 1871. Record given. from memory by one of the drillers.

?	140	to	580	=
2d SS., estimated	40	"	620	=
Ŷ	115	66	735	==
Stray SS	20	"	755	=
?	25	"	780	=
3d SS	25	"	805	=
?			880	
4th SS	•		887	
? (soft measures, no sandstone)	113	66	1000	=

Drilled dry. Unproductive.

1024. M'Laughlin Well.

May, 1876.

On Marshall farm, Allegheny township, Venango county, 5 miles S. E. of Pleasantville. Authority, Tobias M'Laughlin.

Well mouth above ocean in feet				•••
Conductor	10	to	10	=
SS	30	44	40	=-
Slate and shale	140	"	180	=
SS	58	"	238	==
? (Interval unknown)	127	"	365	=
1st SS. (First Sandstone)	32	"	397	=
?	233	**	630	==
2d SS	20	66	650	=
?	113	46	763	=
3d SS., shells	74	66	837	==
Slate	30	66	867	=
Stray SS. (4th)	9	"	876	=
Slate	30	44	906	=
5th SS	2	"	908	=
Slate	17	"	925	==
Diddo titli				

Drilled dry. Cased at 292'. Not tubed. No oil.

1025. Dawson, No. 3.

About 1865.

On Dawson farm, Allegheny township, Venango county, 6 miles south-east of Pleasantville. Authority, John's History of Petrolia, p. 445.

Well mouth above ocean in feet				
?	119	to	119	===
SS., gray			137	
?	94	"	231	=
SS., gray	7	66	238	=
1	136	"	374	=
SS., gray	16	"	390	=

186 LL. oil Well Records. J. F. Carll, 1877.

9	3	to	393	=
SS., gray	22	66	415	==
?	16	"	431	=
\$8	19	"	450	==
?	5	"	455	
SS	11	"	466	=
?	7	46	473	==
SS., white	12	"	485	=
?	23	66	508	=
SS	5	66	513	===
?	11	"	524	=
SS., gray and red	20	66	544	=
	70	66	614	=
SS. PTRV.	*		610	_ •

CHAPTER X.

VICINITY OF PLEASANTVILLE, TITUSVILLE AND ROUSEVILLE.

1026. Harmonial Well, No. 1.

1868.

Porter farm, borough of Pleasantville. Authority, S. Minor.

. •				_	
Well mouth above ocean in feet					1620
? (Interval unknown)	132	to	132	_	1488
1st SS. (First Sandstone)	70	"	202	=	1418
7	146	"	348	=	1272
2d SS	12	"	360	=	1260
?	216	"	576	=	1044
3d SS	40	"	615	=	1004
?					913
4th SS	40	"	747		873
?	-		812		808
5th SS			830	_	790
1 1 2 pocket,	5	"	835	=	785

[A record of this well was published in the Nettleton collection. The one here given was obtained no doubt by Mr. Minor from the drillers at the well, and we insert it because it shows two mountain sands not mentioned in the other record. The ocean level is also raised 6', to correspond with our elevations established since the first publication.]

1027. M'Laughlin Well.

July, 1875.

Small farm, on the road from Pleasantville to Enterprise, and near the north line of the borough of Pleasantville. Authority, T. M'Laughlin.

Well mouth above ocean in feet					1586
2	540	to	540	=	1046
1st SS., estimated	20	66	560	===	1026

?	100	to	660	==	926
2d SS					892
9	70	"	764	=	822
3d SS	9	"	773	=	813
•	30	66	803	=	783
4th SS	25	"	828	=	758
?	7	44	835	=	751

Drilled dry. A little dark oil sand-pumped. The well was never tubed, as the indications for oil would not warrant the expense. Before the engine was taken away it was drilled about 30' deeper than given above, in quest of another sand, but nothing but soft rocks was found.

1028. Lambert Well, No. 1.

Baum farm, $1\frac{1}{2}$ miles south-west of Pleasantville. Authority, Jonathan Watson.

Well mouth above ocean in feet				
? (Interval unknown)				
2d SS. (Second Sandstone)estimated	40	"	494	=
	221	"	715	==
3d SS	40	46	755	=_
?	45	"	800	=

1029. Johnson Well.

February, 1877.

On land of A. W. Brown, near the south-west corner of borough of Pleasantville. Authority, Jesse Johnson, owner.

Well mouth above ocean in feet				
Conductor	20			_
Slate, gray	10	"	30	=
SS., very hard	40	"	70	=
Slate, ordinary	110	**	180	=
Mt. SS	60	"	240	=
Slate	160	66	400	=
SS., gray, hard	30	"	430	=
Slate and shells, hard drilling	215	"	645	=
2d SS. (oil and gas at 684')	45	"	690	=
Slate	90	66	780	=
3d SS	23	66	803	=
Slate	82	44	885	=
4th SS., yellow pebbles and a little oil	6	"	891	=
Slate	25	"	916	
5th SS., black sand and pebbles 2', fine-grained				
sand 25'	27	64	943	=
Slate	20	"	963	

No red rock in any part. A little salt water in 3d SS. Unproductive.

1030. M'Caslin Well, No. 1.

1865.

John M'Caslin farm, 1 mile south-west of Pleasantville, on road to Jerusalem Corners.

			•••
40	to	40	==
50	"	90	=
89	"	179	=
261	66	440	=
160	66	600	=
3	"	603	=
30	**	633	=
	40 50 89 261 160 3	40 to 50 " 89 " 261 " 160 "	40 to 40 50 " 90 89 " 179 261 " 440 160 " 600 3 " 603 30 " 633

Wet hole. Seed bag on tubing at 580'. [Produced several barrels of amber oil.]

1031. Dickson Well.

1876.

On the John Gregg farm, Oil Creek township, Venango Co., 2 miles south-east of Titusville. Authority, Joseph Dickson.

540	to	540	=
15	46	570	=
18	"	588	=
8	"	596	=
	540 15 15 18	540 to 15 " 15 " 18 "	540 to 540 15 " 555 15 " 570 18 " 588 8 " 596

Drilled dry. Best production, 2 barrels per day. Green oil. Very little gas.

No well defined sands were found in this well until the Stray was struck. The upper sands were represented only by bands of shells. The 3d SS. was very good, but the usual order of pebble and sand was reversed, the fine sand being at the top of the rock and the pebbles at the bottom.

1032. Wray Well.

On the Original Petroleum Company's tract, Oil creek, 1 mile below Titusville, and a short distance below the pioneer "Drake Well." The derrick floor was about 75' above the creek level. Authority, D. A. Wray.

Well mouth above ocean in feet			10	
Conductor, estimated	20		30	
Slate, with very hard shells	55,		85	
Slate and shale, softer	55	"	140	=
Red rock, estimated	10	"	150	=
Hard shells	20	"	170	=
Slate	41	cc	211	=
1st SS., coarse and soft	48	44	259	
? (Interval unknown)good drilling	174	66	433	=
2d SS. (Second Sandstone)	25	66	458	=
Slate	15	64	473	=
3d SS., first 20' very good pebble sand	42	44	515	==
Slate pocket,	10	"	525	=

Drilled dry. Cased at 170'. Started to pump at the rate of 5 barrels per day, but fell off rapidly. Exploded two torpedoes in the well and pumped it faithfully for a month, but it failed to pay expenses and was abandoned.

1033. Original Petroleum Company's Well, No. 2.

Original Petroleum Company's farm, Oil creek township, Venango county. Authority, —.

Well mouth above ocean in reci,				
?			109	
Slate, hard; good show of oil, some gas	16	"	125	==
SS., gray	3	"	128	=
Slate, very hard blue rock	7	"	135	=
? (some show of oil)	14	"	149	=
1st SS	44	"	193	=
Fire-clay	1	44	194	=
Slate, soft	11	\$ 6	205	==
Slate, soft (good show of oil)	61	66	266	
Slate	106	"	372	=
SS., dark blue	1	"	373	==
?	4	44	377	=
SS., dark gray	1	66	378	=
?	22	15	400	=
Slate	20	"	420	==
2d SS	20	46	440	==

Cased at 102'. Below the 2d SS. is a "light black slate."

1034. Grant Well.

1864.

Buchanan farm, Rouseville. Authority, Mr. Willoughby.

Well mouth above ocean in feet					1027
? (Interval unknown)	173	to	173	=	854
1st SS. (First Sandstone)	42	66	215	=	812
	110	64	325	=	703
2d SS	28	"	353	=	674
•	117	**	470	=	557
28 58	20	66	490		537

1035. Dearborn Well.

1864.

Buchanan farm, Rouseville. Authority, Mr. Willoughby.

Well mouth above ocean in feet, approximately.	• • • • •				1046
1	195	to	195	=	
lst SS.	40	"	235	=	
7	110	"	345	=	
2d SS	27	"	372	=	
Ž	118	46	490	=	
3d SS	30	"	520	=	

1036. Rich Well.

October, 1876.

One mile north of Shaw farm, between Walnut Bend and Rouseville, Cornplanter township, Venango county. Authority, John S. Rich.

Well mouth above ocean in feet					
Conductor	10	to	10		
SS., yellow	16	"	26	==	
Slate, black	4	"	30	=	
Coal and shale	3	* 6	33	=	
Slate, black	6	66	39	=	
SS. shells	40	"	79	=	
SS., white	10	6.6	89	=	
Slate	30	46	119	=	
SS., white	12	44	131		
Slate and shells	60	"	191	==	
SS., white	9	6.6	200	_	
Slate	17	23	217	=	
SS., gray	4	"	221	=	
Shells and slate	20	**	241	=	
Slate,	11	66	252	=	
SS., close and white	47	65	299	=	
Slate	1	61	300	=	

	_		000	
SS., (Sandstone) gray	2	to	302	
Slate (fresh water cased off)	11	44	$\frac{313}{322}$	==
SS., gray	9	46	357	==
Slate and shells	35	٠.		==,
SS., gray	7		364	==
Slate, black	29	"	393	==
SS	11		404	==
Slate	37	4.4	441	==
SS., shells	40	66	481	===
SS., gray	17	44	498	==
Slate, black	18	4-6	516	=
SS., gray	3	44	519	==
SS., shells	30	66	549	==
SS., gray	2	"	551	==
Slate, black	30	"	581	==
Slate, red	40	* 6	62I	==
SS., shells.	25	• •	646	===
Slate, red	4	66	650	==
SS., shells	27	66	677	==
Slate, red	4	66	681	==
SS., shells	15	46	696	==
1st SS. (small show of oil)	60	"	756	==
SS., shells	20	46	776	=
Siate, black	24	"	800	=
SS., gray	3	"	803	==
SD., gray	27	4.6	830	=
Slate, black	4	44	834	=
SS., shells	6	"	840	
Slate, black	38	66	878	_
2d SS. (no oil)	4	66	882	==
State	1	66	883	=
Shell, gray	47	6.6	930	==
Slate		66		
Shells	15		945	==
SS., gray, (a little black oil)	16	66	961	==
Slate	1	33	962	=
SS., white, (black oil filled up 200')	8	66	970	==
Slate	21	66	991	=
SS., white, some pebble	9		1000	==
Slate	15		1015	=
Shells and slate	3	66	1018	==
TO T				

Drilled Dry. Cased at 313'.

Best production, 5 barrels per day. Black oil.

CHAPTER XI.

WELLS IN WARREN AND CRAWFORD COUNTIES.

1037. Hague, or "Sheffield Gas Well."

September, 1875.

Two and a half miles east of Sheffield, on land of Horton & Co., Sheffield township, Warren county. Authority, W. W. Hague.

Well mouth above ocean in feet, approximate	<i></i>		<i></i> .		1420
Conductor	16	to	16	=	
? (Interval unknown)	164	"	180		
1st SS. (First Sandstone)	20	44	200	=	
?	57	"	257	=	
2d SS	18	"	275	=	
?	83	"	358	=	
Stray sand, estimated	10	"	368	=	
?	50	"	418	=	
3d SS., fine and muddy	28	"	446	=	
?	24	"	470	=	
Red rock, estimated	20	"	490	==	
?	110	"	600	=	
Red rock, estimated	20	"	620	=	
?	325	"	945	=	
Red rock, estimated	20	"	965	==	
?	80	44	1045	==	
Sandstone, estimated	10	"	1055	=	
9	295	"	1350	=	
Sandstone, reported	30	"	1380	==	
?	125	"	1505	=	
Sandstone and shale, reported	20	"	1525	=	
?	105	"	1630	=	

Drilled dry. Cased at 175'. Best production, half a barrel of oil per day. Oil green. Gravity, 49°. Gas sufficient to fire 20 boilers. Gas, salt water and a show of oil in the 3d sand (520'). Amber oil with some gas at 1045'. Great gas vein at 1350', a few feet below which almost pure benzine was brought up in the sand-pump. Green oil at 1505'.

[The above record is very imperfect as furnished in the original blank, only the distances from the surface to the top of 13—I.I.

the sands and red rocks having been recorded. In reducing it to form, these strata have been partly estimated and partly given according to common report, and no doubt some are too thick and others too thin, but the position of the top of each corresponds to the measurements given in the blank.

It is a pity that a precise record of this well cannot be obtained, as it is widely known and talked about on account of the unusual phenomenon presented by the formation of ice in it near the point of gas inflow at 1350 feet from the top. Some have doubted this ice story, but there can be no question about it. Ice was brought up in the sand-pump while drilling in mid-summer. After completion, the well was tubed, and the tubing partly filled with water before inserting the suckerrods. When the rods were put in, some obstruction in the tubing stopped them just above the gas vein, and they could be forced down no farther. The tubing was drawn to ascertain the cause, and several joints were found closed up solid with ice. The cold is produced no doubt by the sudden expansion of the gas as it enters the well from the rock where it has been confined under a tremendous pressure.

The gas is conveyed to the town of Sheffield by pipes from the well, where it is used for heating and illuminating purposes.]

1038. Dingley Well. 1874.

On lot No. 446, Warren county map, about midway along the southerly line of said lot. Authority, Capt. A. Dingley.

Well mouth above ocean in feet, about	• •		• • • • •	• • •	1380?
? (Interval unknown)	575	to	575	=	
Hard shells with pebbles	5	46	580	=	
?	20	4.6	600	=	
Red rock, estimated	20	66	620	=	
?	66	46	686		
Ist SS. (First Sandstone),estimated	20	66	706	==	
?	79	#4	785	===	
2d SS	6	**	791	==	
Sand shells	9	66	800	===	
?	90	66	890	=	
Shells of green sand	5	"	895	=	
?	30	44	925	=	
3d SS	32	44	957		
? pocket,	4	66	961	=	

Drilled dry. Cased at 170'. First slow of gas at 540'. Best production, 2 barrels of green oil per day for one week. Terpedoed, opened a crevice and spoiled the well.

I will further state that I put down a well on lot No. 455, about 80 rods due south from the one above described, to the depth of 1200 feet, and found nothing but strata of hard and soft shale of different colors, with very hard dark blue rock during the last forty or fifty feet of the drilling.

1039. Atlas Well.

1367.

On Atlas Oil Company's tract, section 238, Eldred township, Warren county. Authority, Wm. W. Hague.

Well mouth, above ocean in feet					1520
? (Interval unknown)					
1st SS. (First Sandstone) hard, estimated					1242
?	59	44	337	==	1183
2d SS., hard, estimated	20	44	357		1163
?	173	66	530	==	990
3d SS., hard	48		578	=	942
?poeket,	10	44	£88	==	932

Wet hole. Cased at 320'. Best production, 15 barrels per day. Gas sufficient to fire four well boilers. Green oil. Gravity, 46°.

1040. Cattasaque Well.

1865.

On tract No. 342, Eldred township, Warren county. Authority, Otis Manchester.

Well mouth above ocean in feet				
Drive pipe	11		11	
Slate	4	"	15	==
Soapstone	78	44	93	==
Slate, dark	149	4.6	242	
Sandstone, white; 7' of pebble on top	28	46	270	
Soapstone	180	"	450	==
Slate	35	44	485	===
Sandstone, white and fine	6	"	491	
S apstone	88	46	579	
Slate	41	"	620	=
Red rock	49	66	669	=
Soapstone	33	"	702	
Red rock	24	44	726	==

196 I.I. OIL WELL RECORDS. J. F. CARLL, 1877.

Slate	74	to	800	=
Red rock	15	64	815	=
Slate	79	66	894	=
Red rock	20	::	914	=

Wet hole. Unproductive. Water at 13', 37', 53', 95', 400' and 738'. Gas at 248', 270', 485', 630' and 800'.

1041. Experimental Well, No. 1.

Cotter farm, on Brokenstraw creek, Pittsfield township, Warren county, 2 miles above Garland. Authority, C. W. Hare, the present owner.

Well mouth above ocean in feet				• • •
Conductor	13	to	13	==
Slate, blue and gritty	6	۲¢	19	~:
SS. (Sandstone) grey	2	44	21	=_
Slate	11	"	32	===
SS	2	ŧţ	34	==
Slate	49	"	83	=
Shale	30	44	113	
SS., white and flinty	40	46	153	==
Soapstone	54	"	207	==
Slate, gritty and mixed with quartz	18	44	225	=
Red rock	4	"	229	
Soapstone	5	"	234	=
Slate, with thin white sand shell	16	"	250	==
Soapstone	43	"	293	=
SS., quartz, thick oil and gas	2	"	295	==
Soapstone oil show	35	"	830	==
SS., (crevice)	2	14	332	==
Soapstone, show of oil and soot	20	"	352	
Slate	10	"	362	==
Soapstone	14	44	376	=
SS	4	"	380	===
	240	44	620	==
?(Interval unknown)	10	"	630	=
Slate, hard	5	46		=
SS	97	"	732	_
Soapstone and slate	31 7	"	739	
3d SS	8	"	747	=
Slate, soft and soapy	8	••	141	===

Wet hole. Seed bagged at 116'. Tested at 634', and again at 747'. Unproductive.

Another well was put down on this farm of which no log can be found.

[This other well referred to was on an island in Brokenstraw creek, and I was informed by Mr. John Jones, lessee of the farm, who appeared to be perfectly familiar with the history

of these wells, that about 200' of drive pipe had to be driven in the island well to reach the bottom of the drift; that the well was drilled 1,000' and then tested for two weeks. Failing to produce oil it was sunk 500' deeper, and again tested with like results. On the last test, which was continued for 3 weeks, it showed no oil or gas but pumped about 75 barrels per day of very salt water. 1,500 feet at that time (about 1866) was a very unusual depth for a well, and it is a great pity that the record is lost. It would have given us some idea of the measures for at least 1,100' below the horizon of the Venango oil group.—J. F. C.]

1042. " Porkey Run" Well. 1877.

S. Q. Brown farm; tract 87, Oil Creek township, Crawford county, 3 miles north-east of Titusville. Authority, Wm. F. Newton, lessee.

Well mouth above ocean in feet	<i>.</i>			
Conductor (wood, 25; sheet iron, 39;)			39	
SS. (Sandstone) yellow	20	٤.	59	=
Slate, soft	15	44	74	=
Blue mud, running in well	15	44	89	==
Slate	101	"	190	=
1st SS	42	4 6	232	=
Slate, soft soapstone and red rock	184	44	416	=
2d SS., grey	22	6.6	438	=
Slate	20	"	458	=
Sand shells, hard and grey, no pebble	12	46	470	==
Slate, soft, no red	80	"	550	==

The casing had to be put in at 103' to shut off the mud which was freely running into the well, making it almost impossible to drill. Water came in below this point, and consequently the well was drilled wet. There was a red band about 6' thick in the lower part of the slate immediately above the 1st SS.

Unproductive.

1043. Newton Gas Well. May, 1872.

On A. H. Nelson farm, Oil Creek township, Crawford county, 51 miles north-east of Titusville. Authority, Wm. F. Newton.

Well mouth above ocean in feet				
Conductor			15	
Sandstone	25		40	==
Slate	160	46	200	==
Mountain SS. (Mountain Sandstone)	30	4.	230	=
Slate, partly red	245	"	475	==
1st SS	40	"	515	==
Slate and a little red rock	161	"	676	=
2d SS., stray, grey and very hard	12	44	688	=
Slate (no red).	12	44	700	==
2d SS	17	"	717	==
Slate (no red)	23	"	740	=
Od SS	40	"	780	=

The 3d SS, was white, with a slight mixture of yellow, and pebbly all the way through. There were two mud veins, one at 743' and one at 746½'. The gas comes in in about equal quantities at these two points. This was proven by lowering the casing to 745', which decreased the flow just about one-half, as near as could be estimated. It was then lowered to 748', and there remained scarcely sufficient gas to run the boiler.

In the fall of 1875 salt water (very salt) accumulated in the well and interfered with the flow of gas. It was then cleaned out and tubed with one inch pipe for the purpose of keeping the salt water down. It was pumped steadily with this small pump, and on the sixth day showed some oil. On the seventh day the oil had increased and was being delivered with the water at the rate of one barrel per day. At this time the small pump rods broke, the weather was unfavorable for "overhauling," and as the water did not now interfere with the gas, the pumping stopped. It has not been pumped since, but makes some little oil now in the gas receiver. The oil appears to be the same as that produced at Church Run.

The flow of gas from this well when first struck has been estimated at 5,000,000 of cubic feet per day. In 1877 an attempt to make an accurate measurement of it was made by means of a gasometer prepared for the purpose, but the volume of gas was so great that the effort failed.

Shortly after the well was struck pipes were laid to Titusville, and the gas was introduced into many dwellings, and used by refiners and others for heating purposes. It is still used in this manner as far as the well is able to supply them. The flow has gradually decreased from the start, and is now (March, 1877,) comparatively small.

CHAPTER XII.

SUGAR CREEK; RAYMILTON; FRANKLIN; COCHRAN.

1044. Well No. 2.

May, 1871.

On middle branch of Sugar Creek, Jennings and Ralston farm, Jackson township, Venango county. Authority, J. B. Brown.

Well mouth above ocean in feet				
Drive pipe	48	to	48	=
Soapstone	64	66	112	=
Mountain granite freestone	28	66	140	==
Slate	72	"	212	=
1st SS. (First Sandstone) hard	28	"	240	=
Red rock	80	44	320	=
2d SS., A, pebble	3	"	323	=
Slate	8	"	331	=
2d SS., B	17	66	348	=
Slate	100	"	448	=
Red rock	100	"	548	=
Fire clay	23	"	571	=
3d SS., good	8	"	579	=
Mud vein	2	"	581	==
Shalepocket,	25	"	606	=

Cased at 335'.

Best production, 8 barrels per day. Dark green oil. Gravity, 44½°, now 43°.

This well is 480' north of No. 3.

1045. Well No. 3.

1872.

On middle branch of Sugar Creek, Jennings and Ralston farm, Jackson township, Venango county. Authority, J. B. Brown, owner.

Well mouth above ocean in feet		• • • • •		
Drive pipe	95	to	95	=

7	205	to	300	=
2d SS	38	"	338	==
	212		550	==
3d SS	19	66	569	=
7 pocket,	14	"	583	=

Cased at 310'.

Best production, 2 barrels per day. No gas of any account-Dark oil. Gravity, $42\frac{1}{2}^{\circ}$.

Abandoned this well after torpedoing and testing.

This well is 480' south of No. 2.

1046. Well No. 2.

September, 1876.

Foster farm, Jackson township, Venango county. Authority, J. B. Brown, owner.

Well mouth above ocean in feet				
Conductor			23	
?	197	"	220	=
Mountain granite freestone	20	**	240	=
? (Interval unknown)	200	66	440	=
1st SS. (First Sandstone)	24	"	464	=
?	108	"	572	=
2d SS	3	44	575	=
?	89	4.4	664	=
3d SS	15	44	679	=
? pocket,	9	"	688	=

Drilled dry. Cased at 240'.

Best production, 6 barrels per day.

Dark oil. Gravity, 43½°.

1047. Mason Well, No. 1.

Raymilton, Sandy Creek township, Venango county. Authority, Mr. Ritchie; from memory.

Well mouth above ocean in feet					
?	492	to	492	==	
2d SS	38	"	530	=	
? Some red rock	220	"	750	=	
Stray 3d SS	20	4.6	770	=	
Slate	12	66	782	=	
3d SS	10	66	792	===	

Wet hole. Production, 5 barrels per day of green oil.

In "Company Well, No. 2," near the above, the rocks were about the same, but only a small quantity of oil was obtained.

It was afterwards drilled to the depth of 1,000 feet. Nothing but slate and red rocks was found below the 3d sand. The red rocks lay in two bands, probably as much as 100 feet in thickness, both together.

1048. Surprise Well, No. 1.

1870.

J. Bleakley farm, Patchell Run, Sugar Creek township, Venango county, 2 miles N. N. E. of Franklin. Authority, John F. Carll.

Well mouth above ocean in feet				* * *
? (Interval unknown)			95	
Sandstone	31	"	126	=
?,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	19	"	145	=
Sandstone,	5	"	150	==
?	27	"	177	=
Sandstone	10	"	187	=
	18	46	205	=
Red rock	105	66	310	===
?	11	"	321	==
1st SS., (stopped in sand,)	16	66	337	=

Wet hole. Crevice with salt water and oil at 328'. Production at first, about 225 barrels per day. Averaged about 100 barrels per day during the first month. Always pumped considerable salt water with the oil. Color of oil black; gravity 32°.

1049. M'Elhenny Well. September, 1875.

M'Elhenny farm, Oakland township, Venango county, on Two Mile Run, 5 miles above its junction with the Allegheny river. Authority, J. Johnson, driller.

Well mouth above ocean in feet			· • · · ·	
?	164	to	164	==
Mountain SS	15	55	179	==
Red rock	110	61	289	=
9 ************************************	29	cı	318	=
1st SS., oil from lower part	55	* *	373	=
Mud, slate, rock	127	"	500	==
2d SS., shelly	2	"	502	==
?	130	**	632	=
3d SS., shelly	8	46	640	=

1050. Washington Well.

1876.

On Wm. Murrin farm, Cranberry township, Venango county. Authority, C. E. Taft.

Well mouth above ocean in feet					-+1176
? (Interval unknown)	328				+ 848
Red rock	115	66	443	=	+733
Slate	10				+723
1st SS. (First Sandstone)	47	"	560	==	+ 676
Slate	122				→ 55±
2d SS	18	44	640	=	+536
Slate	100	66	740	==	+ 436
Red rock	15	"	755	=	+ 421
3d SS. (shells)	10				+ 411
Slate, with red rock and fossil shells	190				+ 221
SS., very hard	8				+213
Slate, with red rock and fossil shells	138				+ 75
SS. flaggy, hard and close; blue, grey and					•
white; oil and gas show	300	"	1401	=	225
Slate and shale, soft drilling, no decided					
red rock	105	"	1506	=	 3 30

Drilled dry. Cased at 220'. But little gas. No oil. This well stopped drilling in "white slate."

1051. Swan Well.

Cochran farm, Cranberry township, Venango county; on the the Allegheny river. Authority, ————.

Well mouth above ocean in feet					
	175	to	175	=	
Red rock	100	"	275	=	
1st SS	40	"	315	=	
?	117	"	432	=	
2d SS	18	"	450	=	

Second sand oil. Gravity, 34° to 35°.

CHAPTER XIII.

HORSE CREEK; SLATE RUN; SALINA; SALEM; ROCKLAND.

1052. Folly Well.

Situated in Cranberry township, Venango county, at the mouth of Horse Creek, on land owned by Mr. Lawsons and a New York company. Authority, ----

Well mouth above ocean in feet				
? (Interval unknown)	210	to	210	==
Rock (probably meaning sandstone)			220	
3	-		284	
Rock	28	"	312	=
?	29	4.6	341	==
Rock, upper part red	29	"	370	=
2	86	"	456	=
G (014) 3 007/ 0	:	າ ຄ.	051	

Gas at 214' and 225'. Crevice at 292' and 365'.

1053. Collins Well, No. 5.

On John Hoge farm, Slate Run, 3 miles south-east from Oil City. Drilled in 1872 to seventh sand, and deepened by Mr. Haskell in 1873. Authority, H. M. Haskell.

• •				
Well mouth above ocean in feet			••••	
Conductor	47	to	47	=
?	43	"	90	=
1st SS. (First Sandstone)	30	"	120	=
7	50	66	170	=
2d SS	25	"	195	=
9	5	"	200	==
3d SS	25	"	225	==
9	145	66	370	==
4th SS	30	4.6	400	=
?	148	44	548	==
5th SS	8	66	556	=
?	29	"	585	==
6th SS	40	"	625	=

?	60	to	685	=
7th SS., the oil rock	33	"	718	=
Slate and shale	100	"	818	=

1054. M'Bride Farm Well.

Near Salem, Cranberry township, Venango county. Authority, M'Grew Bros., owners.

Well mouth above ocean in feet				
? (Interval unknown)				
2d SS. (Second Sandstone)			853	
?	89	• 6	942	=
SS., gray	40	"	982	=
Slate	23	"	1005	=

Cased at 246'.

1055. M'Grew Well, No. 1.

One mile west of Salem, Cranberry township, Venango Co., M'Grew farm. Authority, M'Grew Bros.

Well mouth above ocean in feet				
?	460	to	460	=
Mt. SS	50	6.6	510	=
?	135	"	645	=
1st SS	62	"	707	=
?	103	66	810	==
2d SS	22	44	832	=
?	78	"	910	=
Gray rock	40	"	950	=
3d SS	12	"	962	=

Cased at 327'.

1056. M'Grew Well, No. 2.

One mile west of Salem, Cranberry township, Venango Co., M'Grew farm. Authority, M'Grew Bros.

Well mouth above ocean in feet				
?	500	to	500	
Mt. SS	50	"	550	=
?	172	"	722	=
1st SS	47	"	769	=
?	95	, "	864	=
2d SS	24	"	888	=
?	126	"	1014	=
3d SS	23	"	1037	=

Cased at 360'.

1057. Well No. 12.

Craig farm, 1 mile west of Salem, Cranberry township, Venango county. Authority, M'Grew Bros., owners.

Well mouth above ocean in feet				
Conductor	10	to	10	=
? (Interval unknown)	649	"	659	=
1st SS. (First Sandstone)	45	"	704	=
?	100	"	804	=
2d SS	30	"	834	==
?	127	"	961	=
Shells, gray	20	66	981	==
Solid gray sandstone	40	46	1021	=
Shells and slate	79	"	1100	=
Slate, red	100	"	1200	=

Cased at 302'.

1058. Brough Farm Well.

One mile south of Salina, on Hall's run, Venango county. Authority, M'Grew Bros., owners.

Well mouth above ocean in feet				
Conductor	6	to	6	=
?	676	"	682	=
1st SS	82	"	764	=
?	51	"	815	=
2d SS	40	"	855	=
?	83	"	938	=
SS., gray	42	"	980	=
Slate	4	"	984	=
Pebble	3	"	987	=
Slate	33	"	1020	==

1059. M'Grew Well.

1875.

Goodrich farm, on Franklin and Clarion pike, near Hall's run, Cranberry township, Venango Co. Authority, D. M'Grew. Well mouth above ocean in feet.

?	466	to	466	=	
Mt. SS.			500		
Slate and red rock	125	"	625	=	
Shells	42	"	667	=	
1st SS	63	"	730	=	
Slate		"	782	=	
Red slate	25	"	807	=	
2d SS	33	66	840	=	

Slate and shells Red slate			915 920	
Gray SS	_		975	
Slate	25	"	1000	==
Drilled dry. Cased at ——.				
No paying production.				

1060. Gates Well, No. 2.

At Rockland Station, on the Allegheny Valley railway, Venango Co. Authority, ——.

Well mouth above ocean in feet				
Drive pipe			32	
? (Interval unknown)		44	132	=
SS. (Sandstone)	10	66	142	
?		"	410	=
SS	17	"	427	==
?	274	"	701	=

Wet hole. Tested at 145' and produced 12 barrels of 28° gravity oil. Tested again at 430' and produced about 10 barrels per day for a short time. Drilled deeper, and abandoned at 701'.

CHAPTER XIV.

RENO; MILTON; FOSTERS; MOUNT HOPE; SCRUBGRASS.

Records of 5 wells on the farm of "Reno Oil Company," at Reno, Venango county, between Oil City and Franklin. Copied from the company's books.

1061. Well No. 7.

March 29, 1866.

Well mouth above ocean in feet, approximately	y			1	020
Conductor		to		=	
Hard blue rock	46	66	54	=	
Sandy slate, hard	6	66	60	==	
SS., white and soft	18	"	78	==	
Sandy state, hard and blue	9	66	87	=	
SS., white, coarse, hard	3	"	90	==	
Slate, blue, soft	92	"	182	==	
Red slate.	103	66	285	=	
1st SS. (First Sandstone)	17	55	302	==	
Slate, blue and sandy	38	"	340	==	
Red slate.	10	"	350	==	
Shale, blue and soft	50	"	400	==	
Shells, blue and hard	33	"	433	==	
2d SS., shelly, blue	18	"	451	==	
Soft blue rock and hard shells	217	"	668	===	
3d SS	12	66	680	==	
Soft, blue, tough rock	15	"	695	==	
Sandy slate and hard shells	17	"	712	==	
Red rock, sandy	28	**	740	\equiv	
Sandy slate, blue	110	"	850	-	
Dark grey and soft blue rock	11	66	861	==	
Shells, hard	40	"	901	==	
Dark grey rock, soft	= 2	"	903	===	
Blue rock, soft	32	66	935	===	
Dark red rock, sandy	3	"	938	==	
Blue rock	2	"	940	=	
Red rock	11	"	951	===	
Blue rock	9	"	960	===	
Red rock	60	"]	020	===	

Slate, blue	5	to 1025	=
Brown rock, hard	5	" 1030	=
Blue rock, soft	2	" 1032	==
Brown and blue rock, hard	3	" 1035	=
Blue rock, soft	10	" 1045	=
Sand shells, blue and hard	3	" 1048	
Blue rock, soft	2	" 1050	=
Bluish gray rock, hard	8	" 1058	=
Mud rock, soft	4	" 1062	=
Gray rock	5	" 1067	=
Blue rock, soft	8	" 1075	=
Blue rock, hard	15	" 1090	=

Wet hole. Cased at 200 feet with 3" casing. Large water vein at 78'. Dry crevice of 18 inches at 288'. First oil show at 441', and again at 1045' and 1050'. Black soot at 293', 708' and 861'. Gas at 861' and quite heavy at 1075'. Unproductive.

1062. Reno Well, No. 30.

Well mouth above ocean in feet:					1016
Drive pipe	42	to	42	_=	974
? (Interval unknown)	227	44	269	==	747
1st SS. (First Sandstone)	17	"	286	==	730
?	118	44	404		612
2d SS., show of oil	22	64	426 .	=	590
?	84	"	510	==	506
SS., gray	19	"	529	=	487
Slate	10	66	539	=	477
SS., white	31	"	570	=	446

Cased at 107'.

1063. Reno Well, No. 38.

Well mouth above ocean in feet				• • •	
Drive pipe	17	to	17	=	
?		"	281	=	
Ist SS	21	"	302	==	
?	124	"	426	=	
2d SS	21	"	447	_	
?	68	"	515	=	
SS., gray	38	"	553	_	
Slate	10	"	563	=	
SS., white.	14	"	577	==	

Cased at 937.

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1064. Reno Well, No. 50.

Well mouth above ocean in feet					1011
Drive pipe	58	to	58	=	953
? (Interval unknown)	204	66	262	=	749
1st SS. (First Sandstone)estimated	20	"	282	=	729
7	119	4.6	401	=	610
2d SS	22	44	423	=	588
7	83	44	506	=	505
SS., gray	27	**	533	=	478
Slate	12	"	545	=	466
SS., white	21	"	566	=	445
0 . 1 . 4 10/					

Cased at 110'.

1065. Reno Well, No. 77.

Well mouth above ocean in feet					1029
Drive pipe	43	to	43	=	986
7	227	44	270	=	759
1st SS	40	44	310	=	719
7	105	**	415	=	614
2d SS	26	44	441	==	588
7	71	"	512	=	517
SS., gray	34	66	546	==	483
Slate	11	4.6	557	-	472
SS., white	20	44	577	=	453
SS., gray shells.	88	64	665	=	364
Red rock and shells	125	66	790	=	239

Cased at 90'.

Records of Fisher, Hasson & Company's wells, on the Milton farm, Cranberry township, Venango county, 4 miles south-west of Oil City. Copied from the books of the company. All drilled dry and nearly all of them good producers.

1066. Well No. 2.

May 30, 1871.

Well mouth above ocean in feet					1345
?					
1st SS	35	"	640	=	705
•	90	"	730	=	615
2d SS	28	"	758	=	587
7	133	**	891	=	454
3d SS	19	"	910	=	435

Cased at 383'.

1067. Well No. 3.

June 11, 1871.

Well mouth above ocean in feet					1358
? (Interval unknown)	610	to	610	=	748
1st SS. (First Sandstone)	40	"	650	=	708
?	110	"	760	=	598
2d SS					
?					458
3d SS	21	"	921	=	437
? pocket,	35	"	956	=	402
Cased at 405'.					

1068. Well No. 4.

August 9, 1871.

Well mouth above ocean in feet					1371
?					
1st SS., estimated	40	44	667	=	704
7	108	44	775	=	596
2d SS., estimated	25	"	800	=	571
?	117	"	917	=	454
3d SS	20	"	937	=	434
? pocket,	10	"	947	=	424
Cased at 287'.					

1069. Well No. 5.

August 23, 1871.

Well mouth above ocean in feet					1406
\$	652	to	652	=	754
1st SS., estimated	40	"	692	=	714
	260	"	952	=	454
3d SS	15	"	967	=	439
? pocket,	29	"	996	=	410
Cased at 297'.					

1070. Well No. 9.

December 26, 1871.

Well mouth above ocean in feet				•••
,	690	to	690	=.
1st SS., estimated	40	"	730	=
•	240	"	970	=
3d SS	14	**	984	=

Cased at 291'.

1071. Well No. 10.

March 27, 1872.

Well month above ocean in feet	 			1400
? (Interval unknown)				
3d SS. (Third Sandstone)	46	962		438
pocket,	"	992	=	408
Cased at 262'.				

1072. Well No. 13.

January 10, 1873.

Well mouth above ocean in feet					
*	750	to	750	=	
1st SS. estimated	40	"	790	=	
Ť	60	"	850	==	
2d SS	30	"	880	==	
7	115	"	995	==	
3d SS	16	44	1011	==.	
? pocket,	29	ε¢	1040	=	
Cased at 302'.					

1073. Well No. 14.

Well mouth above ocean in feet				•••
?,	710	to	710	=
Ist SS	50	46	760	=
9	95	66	855	
2d SS	28	"	883	==
7	125	44	1008	==
3d SS	12	44	1020	=
? pocket,	30	66	1050	==

Cased at 277'.

Well No. 6 struck 3d SS. at 964'; thickness not given. Depth of well, 1015'.

No. 11, 3d SS., 950)' to 962'.	Depth, 994'1402
		Depth, 999'1405

1074. Well No. 2-on the "Three Leases."

August 23, 1871.

Well mouth above ocean in feet				
?	730	"	730	===
1st SS., estimated			770	
7	192	"	962	=
3d SS	15	"	977	== '
7 pocket,	11	н	988	==

Cased at 268'.

Well No. 1 found 3d SS. from 957' to 973', 16 feet thick, and stopped at 976'.

Same company's well, No. 1, Bredin farm, shows 15' of 3d SS., from 1060' to 1075'.

Records of 8 wells owned by Lewis Bonsall & Co., situated at Foster, Rockland township, Venango county. Copied from company's books.

1075. Well No. 1.

Well mouth above ocean in feet				• • •	967
? (Interval unknown)	316	to	316	=	651
1st SS. (First Sandstone)	37	"	353	=	614
?	106	"	459	=	508
2d SS	30	"	489	=	478
7	121	**	610	=	357
3d SS	12	"	622	=	345

1076. Well No. 2.

Same record as No. 1, except the fact that in this well the sands were encountered at one foot less depth.

1077. Well No. 3.

Well mouth above ocean in feet					1022
?	370	to	370	==	652
1st SS	28	"	398	=	624
f 2	112	"	510	=	512
2d SS	28	"	538	=	484
•	124	46	662	=	360
3d SS	12	"	674	==	348

1078. Well No. 6.

Well mouth above ocean in feet				
?	400	to	400	=
1st SS	20	"	420	=
	120	"	540	=
2d SS	28	"	568	=
7	126	"	69 4	=
3d SS	14	40	708	=

1079. Well No. 9.

Well mouth above ocean in feet				. ,	1084
? (Interval unknown)	417	to	417	=	667
1st SS. (First Sandstone)					647
• · · · · · · · · · · · · · · · · · · ·	130	"	567	==	517
2d SS	28	"	595	=	489
9	126	"	721	==	363
3d SS	15	"	736		348

1080. Well No. 12.

Well mouth above ocean in feet				• • •
2,	555	"	555	=
1st SS	20	٤٤	575	=
,	130	"	705	
2d SS	28	"	733	=
***************************************	117	22	850	
3d SS	23			

1081. Well No. 14.

Well mouth above ocean in feet					1090
	427	to	427	=	663
1st SS	20	"	447	=	643
	125	εε	572	=	518
2d SS	30	"	602	=	488
7	122	"	724	=	366
3d SS	21	"	745	_	345

1082. Well No. 17.

Well mouth above ocean in feet					
7	588	to	583	==	
1st SS	20	"	608	=	
7	130	"	738	=	
2d SS	28	"	766	=	
	122	"	888	=	
3d SS	23	"	911	=	

These were all good wells, No. 6 being the largest producer. [A red rock overlies the 1st SS. here, and a stray or gray rock comes in over the 3d SS. These are not noted in any of the records given.]

1083. Eichiholtz Well, No. 14.

Near Lewis Bonsall & Company's wells at Foster, Rockland township, Venango county. Authority, ——.

Well mouth above ocean in feet	• • • • •				967
? (Interval unknowu)	463	to	463	=	50 1
2d SS. (Second Sandstone)	30	"	493	=	474
7	105	"	598	=	369
3d SS	17	"	615	==	352

Well No. 75 found 3d SS. 27' thick at 783', and well No. 78 found it 21' thick at 860'.

1084. Well No. 3.

Mt. Hope, Rockland township, Venango county, belonging to F. Prentice & Co. Authority, L. C. Blakeslee.

Well mouth above ocean in feet	• • • • •				1434
7	20	to	20	=	1414
Coal, position uncertain	2	"	22	=	1412
?	178	"	200	=	1234
SS., white	75	"	275	=	1159
7	395	4.6	670	==	764
Red rock	150	"	820	=	614
1st SS	40	64	860	==	574
Slate	90	"	950	===	484
2d SS., little salt water and oil	30	44	980	=	454
Slate	65	"	1045	=	389
Gray rock, stray SS	15	"	1060	=	374
Slate	15	66	1075	=	359
3d SS	19	"	1094	=	340

Cased at 275'.

Six other wells are given at Mt. Hope, Prentice & Co.'s, Nos. 9 and 15, and Buffalo Co.'s, Nos. 4, 5, 6 and 7, but as they are all made after the above formula, with precisely 130' from top of 1st SS. to top of 2d SS., and 125' from top of 2d SS. to top of 3d SS., it is unnecessary to insert them. The 3d SS. was found in these wells as follows: No 9 at 1070'; No. 15 at 1078'; No. 4 at 1068'; No. 5 at 1064'; No. 6 at 1067' and No. 7 at 1063'.

1085. Scrubgrass Island, Well No. —. 1870. (?)

Near Scrubgrass, Rockland township, Venango county. Authority, W. K. Jacobs, Sup't.

Well mouth above ocean in feet, about					928
Drive pipe			30		
Slate	140	44	170	=	
Red rock	80	"	250	=	
Slate	20	16	270	==	
1st SS	80	**	350	=	
Slate	85	14	435	=	
Red rock	15	**	450	=	
2d SS	40	"	490	=	
Slate.	50	"	540	=	
Red rock	15	* 4	555	=	
"Granite," stray 3d SS	20	"	575	=	
Slate.	15	66	590	=	
3d SS	20	"	610	=	

The Island wells produced largely, and some of them are still pumping (1877).

1086. Scrubgrass Well.

Baum (Witherup) farm, Rockland township, Venango county, at mouth of Scrubgrass creek. Authority, Maj. W. T. Baum. Well mouth above ocean in feet

Drive pipe			46		
? (Interval unknown)	248				
1st SS. (First Sandstone)	•		367		
?	88	* 5	455	=	
2d SS	20	"	475	=	
?	134	46	609	==	
3d 8S	14	**	623	=	

1087. Scrubgrass Well.

Three-fourths of a mile below the mouth of Scrubgrass creek, Baum (Witherup) farm, Rockland township, Venango county. Authority, Maj. W. T. Baum.

Well mouth above ocean in feet				
Drive pipe	37	to	37	=
· · · · · · · · · · · · · · · · · · ·	253	"	290	==
Ist SS	60	* 6	350	==
?	92	44	442	==
2d SS	35	"	477	==
7			597	
3d SS	20	16	617	'

1088. New Well, Scrubgrass.

Lower Baum tract, Rockland township, Venango county. Authority, Maj. W. T. Baum.

Well mouth above ocean in feet	• • • • •				943
Drive pipe	45	to	45	==	898
? (Interval unknown)	245	"	290	=	653
Ist SS. (First Sandstone)	82	44	372	=	571
?	78	"	450	=_	493
2d SS	49	"	499	=	444
7	108	"	607	=	336
3d SS	22	"	629	=	314

Salt water cased off at 519'. Best production, 20 barrels per day. Fair show of oil in first sand.

Records of four wells belonging to the Philadelphia and Boston Company, located on the M'Millan farm, near Scrubgrass, Rockland township, Venango county. Authority, Superintendent in charge.

1089. Well No. 15.

Well mouth above ocean in feet			• • • • •		1143
?	490	to	490	==	653
1st SS	75	44	565	=	578
•	85	44	650	<u></u> -	493
2d SS	40	"	690	=	453
•	110	66	800	=	343
3d SS	24	4.6	824		319
Slate	16	46	840	=	303

1090. Well No. 17.

Well mouth above ocean in feet	• • • • •				1147
7	500	to	500		647
1st SS	75	66	575	==	572
7	85	"	660		487
2d SS	40	"	700	-	. 447
7	108	**	808	===	339
3d SS	30	44	838	==	309
Slate	9	"	847	==	300

1091. Well No. 47.

Well mouth above ocean in feet					1187
•					640
1st SS			617		
9	83	68	700	=	487

218 I.I. OIL WELL RECORDS. J. F. CARLL, 1877.

2d SS	40	to	740	=	447
7	107	"	847	==	340
3d SS	19	"	866	=	321

1092. Well No. 47B.

Situated near Well No. 47, and towards Allegheny river.

Well mouth above ocean in feet				
? (Interval unknown)	290	to	290	=
Red rock		"	380	==
Slate	10	**	390	==
Ist SS. (First Sandstone)	80	"	470	=
*******************************	80	"	550	=
2d SS	40	"	590	==
•	75	66	665	=
"Granite," stray	10	**	675	==
Slate	25	"	700	-
3d SS	20	"	720	=

This record was given from memory.

CHAPTER XV.

BULLION RUN; CLINTONVILLE

1093. Bullion Run Well. May, 1876.

Simcox farm, Clinton township, Venango county. Authority, Phillips Brothers.

Well mouth above ocean in feet				• • •
Slate	10	to	10	=
Mountain SS	100	44	110	==
Slate, with shells	190	"	300	=
SS., hard	20	66	320	=
Slate	75	* 6	395	=
Red rock	100	"	495	==
1st SS. (First Sandstone)	85	46	580	=
Slate, shelly	20	ε¢	600	=
Red rock	45	46	645	==
2d SS., muddy	40	44	685	=
Slate	45	"	730	=
Red rock	10	"	740	=
Stray SS., (probably over-estimated)	40	66	780	=
Slate	15	"	795	=
3d SS	31	66	826	=
Slate	10	66	836	=
~~~~				

Drilled dry. Cased at —. Best production, 5 barrels per day. Color of oil, dark green. The well flows through a ‡ inch pipe. This was the first productive well put down at Bullion Run.

# 1094. Dean and Fertig Well. January 1, 1876.

Coulter farm, Clinton township, Venango county. Authority, I. E. Dean.

Well mouth above ocean in feet				
Conductor				
Coal slate			70	
SS., "fresh water sand"	90	44	160	=
Clata	. 9	66	169	_

#### 220 LL OIL WELL RECORDS. J. F. CARLL, 1877.

SS., very white	125	to	294	=
Slate	31	"	325	==
SS., grey	7	"	332	=
Slate	278	66	610	=-
Mountain SS., dark	135	**	745	=
Red rock	85	"	830	=
Slate	12	11	842	=
SS., close and grey	10	"	852	=
Slate	15	66	867	=
SS	8	"	875	=
Slate	13	44	888	==
SS	4	**	892	=
Slate	18	44	910	=
SS	15	66	925	=
Slate	50	"	975	=
Red rock	13	44	988	=
SS., pebbly, close, show of oil	36	14	1024	==
Slate	66	66	1090	=
SS., grey	25	12	1115	=
Slate	25	**	1140	=
SS. pebbly, no show of oil	4	"	1144	=
Slate	21	**	1165	=
Red rock	17	"	1182	=
Slate	26	"	1208	=
SS. grey, show of oil	10		1218	==
Slate	22	";	1240	=

Drilled dry. Cased at 307'.

No paying production. No gas. Green oil. Gravity, 38°.

# 1095. Watson Well.

1872.

C. M'Kee farm, Clinton township, Venango county. Authority, Wm. M'Kee.

Well mouth above ocean in feet		· · · ·		
Conductor	27	to	27	
Slate	13	46	40	=
SS. (Sandstone) white	210	"	250	
Slate	33	54	283	=
SS	10	44	293	=
Slate	274	46	<b>5</b> 67	===
\$9	135	""	702	==
Red Rock	95	"	797	==
Slate	8	εŧ	805	==
SS	40	44	845	==
Slate	15	66	860	
SS	14	"	874	=
Slate	70	"	944	
Red Rock	12	"	956	=
SS. pebbly, some oil	35	44	992	===

Slate	68	to 1060	=
Red Rock	5	" 1065	=
SS. gray granite	25	" 1090	=
Slate.	16	" 1106	=
SS. white, pebbly and close, gas and oil	51	" 1157	=
Slate.	9	" 1166	=

Drilled dry. Cased at 350'. Unproductive. Gas sufficient to fire one boiler.

# 1096. Dean Well.

April 26, 1876.

Vanamon farm, Clinton township, Venango county. Authority, I. E. Dean.

Well mouth above ocean in feet				
Conductor		to		_
Slate	69	66	90	
SS. (Sandstone) white, water sand	214	66	304	=
Slate	33	"	337	=
SS., gray	9	11	346	=
Slate	275	"	621	=
Mt. SS., gray	140		761	=
Red rock	90	"	851	=
Slate	8	"	859	=
Pebble (show of oil and gas)	40	"	899	=
Slate	15	"	914	=-
SS	14	"	928	=
Slate	70	"	998	
Red rock	12	"	1010	==
Pebble (show of oil)	36	"	1046	=
Slate	68		1114	
SS., gray	8	"	1122	==
Slate	10	"	1132	_
SS., pebbly (show of black oil)	12	"	1144	=
Slate	13	"	1157	
Pebble, close and hard	2	"	1159	=
Slate (good show of green oil)	25	" ]	184	=
Red rock	20	"	1204	=
Slate	26	"	1230	=
SS., shells and gray sand	24	"	1254	=
Slate	12	" ]	1266	=

Drilled dry. Cased at 312'. Best production,  $1\frac{1}{2}$  barrels per day. Gas sufficient to fire 2 boilers. Green oil. Gravity, 48°.

#### CHAPTER XVL

#### EMLENTON.

Records of 5 wells on the Russell farm, near Emlenton, Scrubgrass township, Venango county, belonging to Maj. W. T. Baum. Copied from his books.

#### 1097. Well No. 1.

1870.

Well mouth above ocean in feet				
? (Interval unknown)				
1st SS. (First Sandstone)			490	
7	98	"	588	=
2d SS	32	"	620	==
7	40	46	660	=
"Granite," gas	5	46	665	=
7	35	**	700	=
\$S	20	44	720	==

Best production, 1 barrel per day of amber oil from 1st SS. Gravity, 44°. Oil show at 705'.

#### 1098. Well No. 2.

1870.

Well mouth above ocean in feet				
7				
lst SS	80	"	510	==
7	98	"	608	=
2d SS	36	46	644	
*	34	"	678	===
"Granite"	20	44	693	===
•	21	"	719	=
3d SS	21	66	740	=

Oil at 726'. 1 barrel per day. This well was within ten rods of No. 1.

# 1099. Well No. 3.

1870.

Well mouth above ocean in feet				
Conductor	38	to	38	=
? (Interval unknown)	377	26	415	=
1st SS. (First Sandstone)	80	"	495	=
La	95	"	590	=
2d SS	30	44	620	==
7	40	"	660	=_
Stray SS., estimated	20	"	680	=
7	29	"	709	=
3d SS	18	"	727	=
? (soft, no more sandstone or oil)	373	4.6	1100	==

Oil at 665'. Pumped 6 months* and then deepened. Oil at 718'. This well is 150 rods from No. 1, and down the river.

# 1100. Well No. 4.

1870.

Twenty rods below Russell run.

** • *** *** • *** • * • • • • • • • •				
Conductor	46	to	46	<u>-</u>
7	355	44	401	=
Ist SS	60	66	461	==
1,	145	68	606	=
2d SS	30	"	636	=
?	37	44	673	=
Boulder	19	44	693	=
7	21	"	713	
3d S8	18	66	731	=

Amber oil at 718'.

#### 1101. Well No. 5.

1870.

Twenty rods above Russell run.

Well mouth above ocean in feet				•••	
Conductor	33	to	33		
7.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	388	"	421		
1st SS	69	66	490	==	
9	125	ŧ¢	615		
SS	30	"	645	=	
7	37	"	682	==	
Boulder	16	66	698	==	
7	17	66	715	==	
3d SS. (gas and amber oil)	24	"	739	=	

^{*}At 680'.

### 1102. Young, No. 8.

Emlenton, Russell farm, Richland township, Venango county. Authority, Mr. Young.

Well mouth above ocean in feet (approximately)					
Drive pipe	47	to	47	=	
? (Interval unknown)	263	"	310	=	
Red rock	80	"	390	==	
Slate	20	"	410	==	
1st SS. (First Sandstone)	80	66	490	==	
? (three bands of red rock here)	102	"	592	=	
2d SS. (oil rock)	45	"	637	=	
?	26	"	663	==	
"Granite" or boulder (oil)	20	66	683	=	
7	17	66	700°	=	
3d SS	34	"	734	=	
2	16	* 6	750	=	
Extra stray SS. (3d)	15	"	765	==	
? (10' of red) pocket,	43	"	808	=	

This well was a moderate pumper, the oil coming from the 2d SS, and boulder.

#### 1103. Emma Well.

Emlenton, Richland township, Venango county, near the bridge. Authority, Mr. Perry.

Well mouth above ocean in feet			
9	31 to	31	=
SS	40(?)	6 71	=
7	411 6	482	
Shells of sand	50 6	532	=
7	94 6	626	==
SS., gray	6 "	632	=
SS., red	8 4	640	=
SS., pebble (good show of oil)	27 "	667	=
•	33 "	700	=
Boulder	18(?)4	718	=
?	42 "	760	=
3d SS	26 "	786	=

Cased at 518'. Mud seam and gas at 709'.

# 1104. Crawford & Company's Well.

Near Emlenton, Richland township, Venango county. Authority, ——.

Well mouth above ocean in feet		• • • • • • •	
	700	to 700	
2d SS. (?)	60(9	)" 760	=

?	28	to	788	=
Stray SS. (?)	20(	?)"	808	=
?	140	"	948	==
3d SS	22	66	970	=

#### 1105. Florence Well.

Near Emlenton, Richland township, Venango county. Authority, Capt. Schmock.

Well mouth above ocean in feet			
? (Interval unknown)	420	to 420	==
1st SS. (First Sandstone)	70(	?)" 490	=
?	121	" 611	=
2d SS	<b>54</b>	" 665	=
9	20	" 685	=
Boulder and pebble	20	" 705	==

There is a mountain sand above the 1st.

#### CHAPTER XVII.

#### CLARION COUNTY.

# 1106. M'Grew Bros. Well. 1876.

E. Ritts farm, between Petersburg and Emlenton, Richland township, Clarion county. Authority, D. M'Grew.

Well mouth above ocean in feet				
? (Interval unknown)	906	to	906	=
1st SS. (First Sandstone)	30	46	936	==
?	134	"	1070	=
2d SS	10	66	1080	=_
?	94		1174	=
Grey rock	10	**	1184	=
Slate, free from grit	20		1204	=
3d SS	6	"	1210	=
Slate, soft, estimated	410	"	1620	=
Red rock	40	"	1660	=
Slate, shelly	20	44	1680	=
Slate, soft	20	"	1700	=

Two feet of 3d SS., top, grey, 4' of 3d SS., bottom, good coarse pebbles. Unproductive.

#### 1107. Well No. 1.

Keating farm, near Richmond, 1 mile east of St. Petersburg, Richland township, Clarion county. Authority, M Grew Bros., owners.

Well mouth above ocean in feet				
?	230	to	230	=
Mt. SS	90	£ 6	320	=
?	412	"	732	==
Ist SS	113	"	845	=
?	35	64	880	=
2d SS	12	"	892	=
?	98	"	990	=
Boulder	18	66	1008	==
Slate, black	20	66	1028	==
3d SS	12	"	1040	=

Cased at 382'. Best production, 80 barrels per day. Not drilled through the sand.

#### 1108. Baldcy Well.

Masters'	farm,	Richland	township,	Clarion	county.	Au-
thority, -						
Well mouth	ahove oc	ean in feet.			1334	

Well mouth above ocean in feet					1334
? (Interval unknown)	825	to	825		509
1st SS. (First Sandstone)	25	44	850	=	484
?	50	"	900	==	434
2d SS	40		940	==	594
?	80	"	1020	=-	314
Red Rock	10	"	1030	==	304
?	30	4	1060	==	274
Boulder	9	"	1069	===	265
?	36	"	1105		229
3d SS., not through	35	46	1140	=	194

Drilled dry.

# 1109. Mingo Chief.

Well mouth above ocean in fect					1339
?	300	10	SUU	==	1039
M.SS.(including "40' rock"	100	44	400		939
?	400	"	800	=	539
1st SS	70	46	870		469
?	80	44	950	_	389
2d SS. (estimated)	20	"	970	==	369
? with red rock	140	56	1110		229
3d SS	40	16	1150	==	189

# 1110. Gilbert Well, No. 2.

#### November, 1875.]

Hummell farm, Salem township, Clarion county. Authority, R. V. Gilbert.

Well mouth above ocean in feet					1451?
?	70	to	70	==	
Bluff SS	15	"	85	===	
?	210	"	295	===	
Mt. SS	110	"	405	==	
Slate	40	"	445	==	
SS. "salt water sand"	100	"	545	=	
Slate and shells	410	"	955	=	
1s; SS	80	"	1035	==	
?	20	"	1055	=	
2d SS	20	46	1075		

#### 228 I.I. OIL WELL RECORDS. J. F. CARLL, 1877.

Slate	10	to	1085	==
Red rock	40	66	1125	=
7	60	66	1185	=
Boulder, show of oil	15	"	1200	==

Drilled dry. Cased at ——.'. This well was still drilling when the record was taken (Nov. 5, 1875).

#### 1111. Sherman Well.

Widow Krebbs farm, Beaver township, Clarion county. Authority, ——.

Well mouth above ocean in feet					1404
? (Interval unknown)	25	to	25	==	1379
Coal	2	"	27	==	1377
7,	48	"	75	==	1329
Coal	3	"	78	=	1326
•	122	**	200	==	1204
Mt. SS. (Mountain Sandstone)	160	66	360	===	1044
7	100	"	460	==	944
Salt water SS	40	44	500		904
9	353	46	853	==	551
1st SS	35	"	888	==	516
Slate	25	"	913	==	491
SS	20	"	933	=	471
? including red rock	117	46	1050	=	354
2d SS	15	"	1065	=	339
Slate	15	"	1080	==	324
Red rock	40	"	1120	==	284
**,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	8	tt	1128	=	276
Boulder	10	44	1138	=	266
?	15	"	1153	==	251
3d SS., not through	21	"	1174	==	230
י די וזי מי					

Drilled dry. Cased at ----'.

### 1112. Keily Brothers Well.

Sam. Beals farm, Beaver township, Clarion county. Authority, Mr. Keily.

Well mouth above ocean in feet					1433
?	90	to	90	=	1343
Mt. SS	209	46	299	=	1134
7	602	"	901	==	532
Ist SS. A	25	66	926	==	507
Slate	25	66	951	==	482
Ist SS. B	25	"	976	=	457
Shale, salt water	42	"	1018	==	415
Slate	2	"	1020	=	413
2d SS	40	66	1060	==	373

?	60	to 1120	=	313
Red rock	40	" 1160	==	273
Boulder	10	" 1170	=	263
Slate	11	" 1181	==	252
3d SS., not through	19	" 1200	===	233

Drilled dry. Cased at ______. Crevice at 208'.

#### 1113. Keiley Brothers Well.

Cropp farm, Salem township. Authority, Keiley Brothers.

Well mouth above ocean in feet					1403
? (Interval unknown)	85	to	85	==	1318
Coal	7 9	46	92	==	1311
Slate	28	"	120		1283
Mt. SS. (including 40 foot rock)	220	44	340	==	1063
?	560	41	900	=	503
1st SS. (First Sandstone)	50	"	950	=	453
?	70	44	1020	=	383
2d SS	40	"	1060	=	343
?	43	66	1103	_	300
Red rock	40	"	1143	==	260
SS. (boulder)	15	"	1153	===	245
Slate	5	"	1163	==	240
3d SS	30	"	1193		210
? pocket,	5	"	1198	=	205

#### 1114. Well No. 1.

M'Ilhattan farm, one mile south-east of Edenburg, Clarion county. Authority, M'Grew Bros., owners.

Well mouth above ocean in feet	· · · · ·			
9				
Ist SS.	30	"	725	===
?	301	**	1026	
3d SS.				

Cased at 469'.

#### 1115. Well No. 2.

Moon farm, Edenburg, Beaver township, Clarion county. Authority, M'Grew Bros., owners.

Well mouth above ocean in feet		• • • •		
7	700	to	700	=
1st SS	30	"	730	===
7	242	"	972	=
3d SS	29	**	1001	==

Cased at 442'.

# 1116. Oelschlager Well, No. 1.

Oelschlager farm, Ashland township, Clarion county. Authority, W. J. Brundred.

• •				
Well mouth above ocean in feet				
? (Interval unknown)	285	to	285	=
Mt. SS. (Mountain Sandstone)	125	46	410	=
Slate, shelly	215	"	625	==
Slate	125	"	750	===
Ist \$8	45	4.6	795	=
State, shelly	40	* *	835	===
24 SS	20	"	855	=
Shale, gray	35	44	890	=
Red took	40	66	930	=
Slate, shelly	40	44	970	=
SS., gray	15	2.2	985	==
Slate	7	66	992	==
3d SS	21	" 1	.013	=
Slate	1	**	1014	==
SS, dark	8	" ]	1022	
Slate, shelly	8	44 ]	1030	=
SS., hard write proble, oil	4	" 1	034	=
Slate, dark	5	"	1039	===
SS., shells	3	" 1	042	
Slate, sheliy	13	" ]	(055	==
Shale	10	"	1065	=
Siate, black	อีจี	" ]	120	
Red rock	8	" ]	1128	=

Drilled dry. Cased at —. Unproductive. Gas at 780'. Pebble and oil show from 998' to 1013'.

# 1117. Hope Well.

June 29, 1876.

Camp Ridge farm, Elk township, Clarion county, owned by Hess, Bradley & Co. Authority, M. E. Hess.

Well mouth above ocean in feet					1324
Conductor, clay and sandy loam					1314
88	54	66	64	==	1260
Slate, gray	7	"	71	==	1253
SS., brown	8	"	79	=	1245
SS., w' te	51	**	130	=	1194
Slate, dark	42	44	172	==	1152
SS., white	27	"	199	==	1125
Slate, black	18	"	217	=	1107
SS., greemsh	8	44	225	=	1099
Slate gray	5	"	230	-	1094
SS., dark	94	"	324		1000

Slate, very dark	70	to	394	=	939	
Shale, gray	25	"	419	==	905	
Slate, gray	90	"	509	==	815	
Shale, dark	30	"	539	==	785	
Slate, whitish cast	110	44	649		675	
Shale, dark	50	"	699	==	625	
1st SS., dark	45	"	744	==	580	
SS., black	10	"	754	==	570	
Red rock	10	44	764		560	
Slate, black	13	"	777	===	547	
SS., light	22	"	799	==	525	
Slate, reddish	16	"	815	=	509	
SS., gray	31	"	846	=	478	
Slate, dark	6	44	852	==	472	
Red rock, dark red	45	"	897	==	427	
Slate, light	12	"	909		415	
SS., greenish	12	"	921	==	403	
Slate, dark	11	"	932	=	392	
SS., white	3	• 66	935	==	353	
Slate, light	4	44	939	==	385	
3d SS., dark	3	44	$94\dot{2}$	==	382	
Pebble and sand, some oil	13	"	955	=	369	
SS	22	44	977		347	

Drilled dry. Cased at 333'. Best production, 5 barrels per day. Half enough gas to fire one boiler. Green oil.

#### 1118. Lineman Farm Well.

Elk township, Clarion county. From driller's memory.

Well mouth above ocean in feet			
? (Interval unknown)		to 990	
Edenburg oil SS. (Sandstone)	20	" 1010	==
.Slate	30	" 1040	==
SS., hard, fine and black	15	1055	==
SS., red	20	" 1075	=
Slate blue, and shells	175	" 1250	=
Slate, red	90	" 1340	=
Slate, blue	10	" 1350	==
1st SS. of Oil creek, gray	10	" 1360	==
Slate, black	70	" 1430	
Slate red	10	" 1440	=
2d SS., Oil creek	10	" 1450	=

Tools stuck, and well abandoned.

This record, it will be noticed, comes from one entertaining the erroneous idea that the Southern equivalents of the Oil Creek sands lie several hundred feet below the Edenburg oil rock. With full faith in this theory he drilled on below the regular oil horizon of the Edenburg district, and the record gives us an insight into the measures below, for a distance of 440 feet.

## 1119. Shippenville Furnace Well.

1865. (?)

Jacob Black farm, Elk township, Clarion county. Authority, Jacob Black, Jr.

Well mouth above ocean in feet				
Conductor	26	to		===
SS. (Sandstone) white	16	46	42	==
Mud rock, yellow	3	"	45	===
SS., blue, close	11	66	56	==
Slate	3	"	59	===
SS., blue, coarse	65	44	124	==
Slate, water crevice	4	"	128	=
SS., blue	24	46	152	=
Slate, shelly	320	"	472	=
SS	22	44	494	=
Slate, hard	30	44	524	=
SS., shelly	3	11	527	
Slate	2	"	529	==
SS	5	66	534	=
Red rock	2	46	536	=
Slate, hard	10	11	546	=
SS., blue, 5' top fine, 10' bottom coarse	15	46	561	=
Slate, shelly, very hard	139	"	700	==
SS., gray	15	44	715	=
Red rock, red sand.	15	44	730	=
SS., gray	5	46	735	=
Red rock	20	46	755	==
Slate, shelly	10	"	765	==
Red rock	45	46	810	
Slate, shelly, hard	62	"	872	=
SS	20	"	892	
Slate.	15	"	907	=
SS.	43	"	949	=
Slate	16	"	965	==
SS., white	3	46	968	=
Slate, open	16	41	984	
SS., white	3	44	987	=
Slate, soft	10	"	997	
Red rock	5	66	1002	_
Reu Iock	U			

## 1120. Abram James Well. Drilled 1872-3-4.

On Blyson run, Mill Creek township, Clarion county. Authority, Abram James.

Well mouth above ocean in feet				
Conductor	25	to	25	=

SS. (Sandstone) rotten; no limestone	253	to	278	==
Mt. SS., white and gray (gas at 330')	157	44	435	=
SS., gray (oil at 445' and 518')	90	"	<b>5</b> 25	
Slate, blue	135	66	660	==
SS., gray	28		688	-
Slate	30	46	718	==
SS., gray	13	66	730	=
Slate, with shells of gray sandstone	120	46	850	_
Red rock (gas near bottom)	45	46	895	==
Slate, black, hard and gritty	5	"	900	_
SS., "boulder," gray and gritty	30	"	930	=
SS tomore it the and hard	5	44	935	
SS., "emery," fine and hard				=
Slate, black	11	"	946	
Red rock	5	44	951	=
Slate, blue, with shells	62		1013	_
Red rock	7		1020	=
Slate, black, with gray shells; first salt water	92	44	1112	=_
Shale, black and red; green SS. near bottom	13	44	1125	==
Red SS	4	"	1129	=
SS., gray (gas and oil show)	13	44	1142	=
SS., pebbly, dark gray	11	44	1153	=
Slate, with small "mustard seed" pebbles	6	"	1159	==
SS., fine and light	17		1176	=
Slate, black, with white shells of sand	29		1205	
Slate, blue and soft	18		1223	_
	33		1256	=
SS., light gray and fine				
Red SS., very red	20		1276	=
Soapstone.	167		1443	=
Slate, dark and gritty (gas)	20		1463	==
Slate, light	5		1468	==
Slate, blue, with transparent pebbles	10		1478	=
SS., gray and light gray	21		1499	=
Slate, dark	17	46	1516	==
SS, light gray, hard	27	"	1543	==
SS., white (gas and oil show)	2	"	1545	==
Slate, light blue	17	"	1562	=
SS., fine, dark gray (gas)	8	66	1570	=
Shells of sandstone	5	"	1575	=
SS., gray, coarser near bottom (gas)	30	66	1605	=
Red rock, sand, fawn-colored, like paint (gas				
and oil show)	23	"	1628	=
Soapstone, light and soft	13		1641	=
	45		1686	=
SS., gray and white, with shells and slate				
Slate, clear white, no grit	27		1713	=
Red rock, hematite, very red	6		1719	=
SS., "boulder," fine	15		1734	==
Soapstone	14		1748	==
SS., nearly white (gas and oil)	22		1770	=
Slate, blue, "buckwheat batter"	60	"	1830	
SS., white	2	"	1832	=
Slate, gritty.	6	11	1838	==
SS., sharp and white	4	"	1842	==
* * * * * * * * * * * * * * * * * * * *				

Slate, white	3	to 1845	
SS. (Sandstone)gas	6	" 1851	=
Slate, white	25	" 1879	
SS., hard	2	" 1881	=
SS., coarser at bottom (gas and oil)	23	" 1904	=
Shelly slate	44	" 1948	=
Slate, blue, free from grit	49	" 1997	==
Shelly slate	43	" 2040	
	13	" 2053	
SS., fine (gas)	10	" 2063	
Shale, olive, free from grit	49		=
Shale, olive, with brown shells (gas and oil)	20		
Slate, light blue			=
Soapstone, light brown	20		
SS., white (large increase of gas)	3		==
Shelly slate	7		==
Slate, blue and free from grit	71		==
SS., "boulder," very hard	3	" 2236	
Shelly, very gassy slate	25	· 2261	ur-
Slate, light and soft, not gritty	10	" 2271	==
SS., not through	52	" 2323	=
, -			

Cased at 314', but salt water came in below the casing and stood all the time within 1,000' of the top, so that the well was virtually a "wet hole."

"We are now in a 'boulder' to the depth of 52' with reamer stuck. All through this rock so far we got much gas, and I am strongly of the opinion that a heavy oil producing rock lies immediately under this."

Partially tested at 1,200', but not afterwards. Unproductive.

## 1121. Sligo Well.

August, 1865.

Licking creek, Piney township, Clarion county. Authority, Lyon, Shorb & Co.

Well mouth above ocean in fect				
Conductor	15	to	15	=_
Slate (soft and light 22', black 5')	27	**	43	==
SS., hard	7	"	49	==
Slate, soft and black	6	"	55	==
SS., hard	7	"	62	==
State, shelly	3	"	65	=
Coal	2	"	67	=
SS. (water at 129')	116	"	183	=
Slate, top hard, bottom soft	85	44	268	==
Red rock, soft slate	2	"	270	==
SS., soft	10	66	280	==
Slate	90	66	370	

SS., close-grained and blue	20	to	390	=
Slate	49	"	439	=
SS., hard and blue	27	"	466	=
Slate, soft, "resembling fire-clay"	284	"	750	=
Red rock, soft slate	5	66	75 <b>5</b>	==
SS., hard	10	"	765	=
Slate, blue	21	"	786	=
Red rock (slate)	29	66	815	
Slate, blue	77	"	892	=
Red rock (slate)	3	"	895	==
Slate, brown	30	"	925	=
Slate, hard and soft alternating (oil)	112	46	1037	=
Slate, blue and shelly	14	"	1051	==
SS., blue	30	"	1081	=
SS., blue and red	36	"	1117	=
SS., white and hard	11	66	1128	=
SS., red and white	13	""	1141	=
SS., blue and red	10	"	1151	==

No paying production.

Salt water at 128', 380' and 450'.

Well mouth 173' below the ore bed.

Elevation of top of conductor pipe above tide water at Philadelphia, 1,130'. The Sligo Branch RR. base makes it 1,088'.

[How these varying elevations were obtained we do not know. Our adjustment of RR. levels raises the Low Grade or Bennett's Branch railway 26′, and no doubt carries up the Sligo Branch also; then 1088+26=1114 as the level of the well mouth above ocean, as against 1130+7=1137 by the Philadelphia tide water datum.]

#### 1122. Madison Well, No. 1.

January, 1867.

Brush run, south of Clarion river, Clarion county. Authority, Lyon, Shorb & Co.

Well mouth above ocean in feet				• • •	
Conductor	7	to	7	==	
SS. (Sandstone)	13	"	20	=	
Slate, soft	107	44	127	=	
Slate, red and hard	33	"	160	=	
SS., hard	49	££	209	=	
Slate and shells	81	42	290	=	
Slate, blue	250	"	540	=	
SS., white and hard	12	"	552	==	
Slate	44	44	596	=	

SS., white (gas throwing water 30' high)	40	to	636	=
SS. (Sandstone) red	58	46	694	=
SS., white	75	44	769	=
Slate	35	66	804	=
SS., white	32	46	836	=
Slate	198	"	1034	=
SS., hard, close and white	28	"	1062	=
Slate (salt water and gas)	261	"	1323	=
SS. and shells	63	46	1386	=
SS., white	78	"	1464	=
SS., blue, with hard shelis	124	"	1588	=
Hard pan	23	"	1611	==
Granite, white (harder than steel!)	25	":	1636	==

Wet hole. Oil shows while drilling, but unproductive.

Tools stuck at 1,636' and well abandoned. The gas has been discharging copiously ever since. This well is about 3 miles from Madison, No. 2.

## 1123. Madison Well, No. 2.

January 19, 1865.

Brush run, south of Clarion river, Clarion county. Authority, Lyon, Shorb & Co.

Well mouth above ocean in feet				
Conductor	13	to	13	=
SS., white	81	44	94	=
SS., blue	85	46	179	==
Slate, soft	58	"	237	=
SS., gray (flow of fresh water)	38	"	275	=
SS., blue	98	"	373	==
Slate	145	"	518	=:
Ist SS., gray (gas)	20	"	538	
Slate, blue	112	"	650	=
SS., hard	123	"	773	=
Slate, red, shelly (gas)	68	"	841	=
SS., blue and hard	174	"	1015	_
3d SS., small peobles	32	"	1047	

Wet hole. Several good oil shows while drilling, but unproductive. This well is about 3 miles from Madison Well, No. 1.

#### CHAPTER XVIII.

#### FOXBURG TO PETROLIA.

### 1124. Cliff Well.

About 1870.

Anchor farm, in Wild Cat or Dark Hollow, west of Allegheny river, at Foxburg, Perry township, Armstrong county. Authority, J. W. Ramsey.

Well mouth above ocean in feet		<b>.</b> .		
Drive pipe	21	to	21	==
? (Interval unknown)	153	"	174	==
Mt. SS. (Mountain Sandstone)	21	"	195	=
?	285	"	480	=
1st SS., estimated	20	"	500	=
?	15	"	515	=
Red rock, estimated	40	"	555	=
?	27	"	582	=-
SS., hard blue, estimated	10	""	592	=
?	13	"	605	==
Red rock, estimated	10	46	615	=
?	20	"	635	=
Stray SS., estimated	15	"	650	=-
9	10	"	660	=
2d SS	20	"	680	=
<b>?</b>	35	"	715	=
Red rock, estimated	10	"	725	=
SS., hard, estimated	10	"		=
Boulder estimated	20	"	755	=
?	30	"	785	==
3d SS.,about	20	"	805	=

Best production, 5 barrels per day.

## 1125. Bryan Well.

1870.

Fowler farm, Foxburg, near the Allegheny river. Authority, J. W. Ramsey.

Well mouth above ocean in feet				•••	
2	85	to	85	=	
Mountain SS	30	44	115	=	

	390	to	505	=
1st SS	35	"	540	==
?	135	"	675	=
2d SS	55	46	730	_
?	15	46	745	=
Boulder	20	44	765	==
?	30	"	795	=
3d SS	21		816	=

Best production, 25 barrels.

### 1126. Lambing Well.

Fox farm, near Foxburg, Clarion county. Authority, Stephen Harley.

Well mouth above ocean in feet				
? (Interval unknown)	610	to	610	=
1st SS. (First Sandstone)	40	"	650	==
9	150	""	800	
2d SS	20	46	820	=
9	94	44	914	
3d SS	30	"	944	==

Two streaks of slate occur in the 3d SS., one at 929', the other at 931.' The well is said to be 150' above the Allegheny river

Records of 4 wells on the Columbia Oil Company's "Reddick farm," situated in Allegheny township, Butler county, two miles north 20° west of Parker City. Authority, N. L. Moore, Superintendent.

#### 1127. Well No. 1.

1871.

Well mouth above ocean in feet			
Conductor	20	to 20	=
? •			
3d SS	27	" 1267	=

Drilled dry. Cased at 416'. Production, 8 barrels.

#### 1128. Well No. 2.

#### 1872.

Well mouth above ocean in feet		<b></b> .			1479
Conductor	11	to	11	=	1468
? (Interval unknown)	1369	46	1380		99
3d SS. (Third Sandstone)	18	*6	1398		81

Drilled dry. Cased at 485'. Average production, 11 barrels.

#### 1129. Well No. 3.

#### August 30, 1873.

Well mouth above ocean in feet				1490
Conductor	8	to	8 ==	1482
?	1092	"	1100 =	390
1st SS	50	"	1150 =	340
7	60	"	1210 =	280
2d SS	40	16	1250 =	240
?	138	"	1388 =	102
3d SS	18	"	1406 =	84
?	2	"	1408 = -	82

Drilled dry. Cased at 505'. Gas sufficient to fire 3 boilers. Best oil indications at 1,396'. Best production, 40 barrels per day. Average to August, 1876, 17 barrels per day.

#### 1130. Well No. 4.

#### January 10, 1876.

Well mouth above ocean in feet					
Conductor, clay	18	to	18	=	
Slate, black	70	"	88	==	
Limestone, blackLimestone	10	* 1	98	=	
Soapstone	57	"	155	==	
SS., 60' rock	60	44	215	==	
Slate, hard shells, gray	60	"	275	=	
SS., fine grained, hard and gray	10	"	285	=	
Slate, black	20	"	305	=	
Slate, shelly	45	"	350	==	
Mountain SS	100	**	450	===	
Slate, with gray shells	300	"	750	==	
SS., gray, hard.	20	£ 5	770	=	
Slate	120	"	890	=	
Slate, white	55	"	945	=	
1st SS., with some gas	60	**	1095	=	
Red rock	35	44	1040	=	
2d SS., oil show	40	"	1080	=	
Slate	2	64	1082	=	

SS	35	to 1117	==
Soapstone	23	" 1140	==
SS	28	" 1168	=
Soapstone	30	" 1198	=
SS	8	" 1206	=
Soapstone	2	" 1208	=
SS	12	" 1220	=
Soapstone	30	" 1250	=
2d SS	27	" 1277	=
Slate pocket,	3	" 1280	==

Drilled dry. Cased at 291'. Gas sufficient to fire 5 boilers. Best oil indications at 1,259'. Best production, 15 barrels per day. Average to August, 1876, 3½ barrels per day. Green oil.

#### 1131. Critchlow Well.

On Dutchess farm, Allegheny township, Butler county. Authority, ——.

Well mouth above ocean in feet				1097
? (Interval unknown)	300	to	300 ==	797
Mountain SS. (Mountain Sandstone)	20	44	320 =	777
?	420	"	740 =	357
1st SS., very hard	20	"	760 =	337
?	220	16	980 ==	117
2d SS., thickness about	20	"	1000 =	97
Ť	10	"	1010 =	87
?	15	44	1025 =	72
Stray SS	13	66	1038 =	59
Slate	2	"	1040 ==	57
3d SS., 15' in sand	15	"	1055 =	42

Drilled dry. Cased at 450.' Oil show in 2d sand.

#### 1132. Elk Well.

On Robinson farm, Perry township, Armstrong county. Authority, Stephen Harley.

Well mouth above ocean in feet				
***************************************				
Ist SS	45	"	775	===
7	65	"	840	=
2d SS	20	"	860	==
± ?:	60	"	920	=
3d SS	30	66	950	=,

## 1133 Kittanning Well.

May, 1869.

W. D. Robinson farm, Perry township, Armstrong county. Authority, Thomas M'Connell.

Well mouth above ocean in feet				
? (Interval unknown)	205	to	205	=
1st SS. (First Sandstone)	45	"	250	=
?	270	"	520	===
2d SS., gas	23	"	548	=
?	22	"	570	-
SS., sand and shells	30	"	600	=
•	170	"	770	==
SS., boulder 20' very hard, 9' soft	29	44	799	=
?	16	66	815	==
3d SS	29	"	844	=

Best production, 20 barrels per day. Gas very strong in 2d SS. Oil in slate at 467'. Show of oil at 475'. Best show of oil at 585'.

#### 1134. Packer Well.

June, 1869.

W. D. Robinson farm, Perry township, Armstrong county, opposite mouth of Clarion river. Authority, Thos. M'Connell. Well mouth above ocean in feet.

?	490	to	490	=
1st SS., estimated	40	4.6	530	=
2	80	44	610	=
2d SS	30	"	640	==
9	137	66	777	==
3d SS	35	65	812	=

#### 1135. Perry Well.

W. D. Robinson farm, Perry township, Armstrong county. Authority, Thomas M'Connell.

Well mouth above ocean in feet				
*	487	to	487	=
1st SS	22	"	509	=
*	165	66	674	=
2d SS	38	"	712	=
9	24	"	736	==
Boulder, very hard	18	"	754	=
	18	"	772	==
3d SS	29	"	801	=

## 1136. Sheasley Well.

1869 or 1870.

Parker City, near west end of bridge, Armstrong county. Authority, J. W. Ramsey.

Well mouth above ocean in feet, about				+875
Drive pipe			51	
Slate	152	46	203	=
Mt. SS. (Mountain Sandstone)	21	"	224	==
Slate	301	"	525	=
1st SS-	30	44	555	=
Slate	15	"	570	==
Stray SS.	20	46	590	=
Slate	35	44	625	=
2d SS	25	£r	650	=
Slate.	15	46	665	=
SS., hard blue.	15	46	680	==
Slate	60	"	740	=
Boulder	20	66	760	=
Slate	60	46	820	==
3d SS no pocket,	30	"	850	=
Best production, 30 barrels per day.				

Best production, 30 parreis per day

### 1137 Armstead Well, No. 1.

At Farrentown, Perry township, Armstrong county. Authority. John Morrison.

01101103,000111111111111111111111111111								
Well mouth above ocean in feet								
?	160	to	160	=	980			
COAL	4	44	164	=	976			
5	36	"	200	==	940			
SS	100	"	300	==	S40			
7	160		460	==	680			
SS., cased 475'	20	**	480	=	660			
? Red shells near bottom	320	46	800	==	340			
2d SS	20	**	820	=	320			
White slate?								
Shelly sand ?								
Red rock								
Shelly sand	298	66	1118		22			
Blue Monday 4'	200		1110		لمك			
Soft shells ?								
Boulder4'								
Slate?								
Stray 3d SS., gray	9	"	1127	==	13			
Soapstone, or mud rock	1	46	1128	==	12			
3d SS., 12' in the rock	12	"	1140	===	0			
•								

[Mr. Morrison says the measurement to the 3d SS. in this well was made three or four times, and is very accurate. It

also corresponds with the measurement in another well put down by him near by. He further says that the Maggie well, about 10 rods north-west of the Armstead, and on the same level, is drilled at least 15' below the 3d SS. The reported depth, 1,166', is not to the top of the sand, but to the bottom of the well.

Parsons well No. 6, mentioned in Report J, 1874, is on the the hillside just below the Armstead. The difference in elecation is about 125′. It was reported to be 1,155′ deep. Mr. Morrison is certain that this is a mistake. He is well acquainted with the history of the well, and knows that the 3d SS. was found at the proper depth to correspond with the same rock in the Armstead.

Mr. Parsons does not remember the depth of the well, but is quite positive that there was nothing unusual in the stratification at this point, and that the well was only drilled to the horizon of the 3d SS., as shown by other wells in the vicinity. We mention these facts to correct the false impression created by the publication of this incorrect record—that there was a sudden drop in the SS. at this point. Nothing of the kind can be discovered in any of the other wells. J. F. C].

#### 1138. Cataract Well, No. 1.

South of Lawrenceburg, Perry township, Armstrong county. Authority, A. McCain.

Well mouth above ocean in feet, about					1134
? (Interval unknown)	338	to	338	==	
1st SS. (First Sandstone)estimated	30	44	368	=	
?	352	٤٤	720	=	
2d SS., estimated	30	"	750	=	
?	200	"	950	==	
Boulder, estimated	15	"	965		
?	15	"	980	==	
3d SS	37	**	1017		

## 1139 Gibson & Ecock Well.

On Fronsinger farm, Parker township, Butler county. Authority, Edward Casey.

Well mouth above ocean in feet				 1382
Clay	14	to	14	 1368

			-00		
Surface SS	15	to	29	==	1353
Slate	51		80		1302
SS., white	7	"	٠.	===	-1295
COAL	3	**	90	=	1292
SS., dark, 15'; white, 35'; dark, 5'	55	**	145	—.	1237
COAL	5	"	150	=;	1232
SS. (Sandstone)	3	"	153	===	1229
Slate	132	"	285	=	1097
LimestoneLimestone	15	"	300	=	1082
COAL	3	"	303	=	1079
Slate	60	66	363	==	1019
SS., white	37	25	400	=	982
Slate	45	44	445	=	937
Bluff SS. "A"	19	46	464	==	918
Slate	10	"	474	=	908
Bluff SS. "B"	18	66	492		890
COAL	6	"	498		884
Mountain SS., with slate at 568 to 569 and 599					
to 607	144	44	642		740
Slate	30	46	672	=	710
Shells	20	46	692	=	690
Slate	15	"	707	=	675
	12	46	719	=	663
SS	30	44	749	=	633
	25	44	774	=	608
Shells	20	66	794		588
SS		"		=	
Slate	31		825	==	557
1st SS	12	66	837	=	545
Slate	85	"	922	==	460
Shells	2	"	924	==	458
Slate	135		1059	=	- 323
SS	3		1062	=	320
Slate	90		1152	=	230
SS	2		1154	=	228
Slate	6		1160	=	222
2d SS	10	66	1170	=	212
Red rock	2	44	1172	==	210
SS., fifty foot rock	15	66	1187	=	195
Red rock	2	"	1189	=	193
Slate and shells	8.	"	1197	= ,	185
Red rock	4	"	1201	=	181
SS., white	9	"	1210		172
State and shells	10	6	1220	==	162
SS., dark	15	"	1235	==	147
Slate	25	44	1260	_	122
SS	30	"	1290	=:	92
Slate	5		1295	='	87
SS., Blue Monday	5		1300	=	1 82
Red rock	12		1312	=	70
SS	4		1316	=	66
Red rock	7		1323	=	59
SS	12		1335		
	14	•	1000	=	47

Slate	10	to 1345	=+	37
SS., boulder		" 1349		
Red rock	2	" 1351	= +	31
Slate	10	" 1361	$=\dot{+}$	21
SS., stray	12	" 1373	=+	9
Slate	4	" 1377	=+	5
SS	6	" 1383	= -	1
Slate	3	" 1386	= -	4
SS	4	" 1390	=-	8
Slate	3	" 1393	== -	11
SS	6	" 1399	= -	17
Slate	3	" 1402	=	20
SS., oil sandrock	16	" 1418	= -	36

#### 1140. Arrowsmith Well.

1875.

On Fletcher farm, between Petrolia and Martinsburg, Parker township, Butler county. Authority, Mr. Arrowsmith.

Well mouth above ocean in feet		+1129
? (Interval unknown)		
LimestoneLimestone		" $22 = +1107$
?	1138	" $1160 = -31$
3d SS. (Third Sandstone)	15	" $1175 = -46$
?	42	" $1217 = -88$
?	4	" 1221 <u> </u>
Stray 4th SS	9	" $1230 = -101$
Slate	G	" 1236 = 107
4th SS	20	" $1256 = 127$
Shale pocket,	44	" 1300 <u> </u>

Best production, 5 barrels per day. Green oil from the 3d SS., pumping at 1,175'. Measurement at 1,217' made steel wire.

After pumping several months it was put down to the 4th SS., securing a large flow of gas, sufficient to run 4 boilers, but not materially increasing the production of oil.

This well is but a short distance from the Edward Bennett well given below.

#### 1141. Edward Bennett Well, No. 1.

October 13, 1875.

On Fletcher farm, between Petrolia and Martinsburg, Parker township, Butler county. Authority, James B. Bachell.

	-	-		
Well mouth above ocean in	a feet			+1138
Conductor	*************	. 16	to	16 = +1122
LimestoneLimeston			**	27 = +1111

Slate	198	to	225 = +	913
Mountain SS	170	66	395 = +	743
7	355	"	$750 = \bot$	388
1st SS	60	64	810 = +	328
2,	115	"	925 = +	213
2d SS	30	66	955 = +	183
Ť	45	"	1000 = +	138
SS. (30' rock)	30	"	1030 = +	108
?	55	"	1085 = +	53
SS., Blue Monday	15	"	1100 = +	38
Slate	25	66	1125 = +	13
SS., boulder	15	44	1140 = -	2
Slate	27	44	1167 = -	29
3d SS	13	"	1180 = -	42
? pocket,	3	"	1183	45
Best production, 45 barrels per day.				

## 1142. Brawley Well, No. 1.

October 17, 1875.

On Fletcher farm, between Martinsburg and Petrolia, Parker township, Butler county. Authority, —.

Well mouth above ocean in feet			+1127
Conductor	18	to	18 = +1109
LimestoneLimestone	10	**	28 = +1099
Slate	217	44	245 = +882
Mountain SS	125	46	370 = +757
? (Interval unknown)	555	"	925 = +202
2d SS	30	"	955 = +172
4	217	46	1172 = -45
## \$8	18	"	1190 = -63

Salt water at 1,004'.

Best production, 100 barrels per day.

#### 1143. Good Enough Well, No. 2.

On A. L. Campbell farm, Fairview township, Butler county. Authority, —.

Well mouth above ocean in feet		+1171	Ĺ
7			
3d SS	15	" 1250 = - 79	þ
Slate, reddish	75	" 1325 = - 154	Ĺ
4th SS (gas, no oil)		" $1341 = -170$	,

Drilled dry. A good third sand well. Increase of gas in the 4th SS., but no improvement in oil.

#### CHAPTER XIX.

GREECE; MODOC; M'CAFFERTY.

#### 1144. Morrison Well, No. 1.

Near Greece City, Concord township, Butler county. Authority, —.

Well mouth above ocean in feet	<i>.</i>		+1110
? (Interval unknown)			10 = +1100
SS. (Sandstone)	60	"	70 - +1040
•	90	"	160 = +950
LimestoneLimestone	20	"	180 = +930
?	260	"	440 = +670
Mountain SS	140	"	580 = +530
?	320	"	900 = +210
1st SS., estimated	20	"	920 = +190
?	170	"	1090 = + 20
2d SS	60	46	1150 = -40
Slate	5	"	1155 = -45
SS., fifty-foot rock	50	"	1205 = -95
Slate	25	"	1230 = -120
Red rock	25	"	1255 = -145
SS., boulder	25	**	1280 = -170
Slate and red rock, alternating	89	"	1369 = -259
Stray 3d SS	20	"	1389 = 279
Slate	25	"	1414 = -304
3d SS. (9' in sand)	9	"	1423 = -313

## 1145. Woods and Ripley Well, No. 2.

On D. Barnhart farm, near Greece City, Concord township, Butler county. Authority, one of the drillers; from memory.

Well mouth above ocean in feet			+1137
			960 = + 177
1st SS	50	"	1010 = +127
•			1250 = -113
2d SS	35	"	1285 = -148

?	205	to 1490 = - 353
3d SS. (12' good)	40	" 1530 = - 393
Limestone between 300' and 400'.		Strav 3d SS. found

## 1146. Say Well.

On J. Campbell farm, Concord township, Butler county, near Greece City. Authority, ——.

Well mouth above ocean in feet				
? (Interval unknown)			250	
LimestoneLimestone	12	"	262	=
?	202	**	464	=
Mountain SS	30	"	494	=_
?	306	**	800	==
1st SS	25		825	=
Slate and shells	275	"	1100	=
SS	50	* ¢	1150	=
Slate	10	"	1160	==
SS, fifty foot rock	50	"	1210	==
7	157	66	1367	===
Red rock, estimated	10	40	1377	==
	10	46	1387	=
Stray 3d SS	25	"	1412	
Slate	35		1447	
3d SS. (35' in sand)	90		T + X )	

### 1147. Sweepstakes Well.

#### August 8, 1873.

Harper farm, Troutman district, Butler county. Authority, I. E. Dean.

Well mouth above ocean in feet			• • • • •	• • •
Conductor	18	to	18	==
Slate	70	"	88	=
SS	30	* *	118	
Slate	85	и	203	=
Limestone, brownLimestone	18	"	221	==
Coal	3	"	224	==
Slate	20	"	244	=
SS	57	64	301	=
Slate	89	"	390	==
Coal, "peacock"	4	**	394	==
SS.	168	44	562	==
	211		773	
Slate, shelly and gray	130		903	
	100		1003	
Slate			1015	
SS., gray	12			
State	88	46	1103	

SS., salt water	40	to 1143	=
Red rock	20	" 1163	=
Slate, black	80	" 1243	==
SS., gray	20	" 1263	=:
Slate	25	" 1288	=
SS., greenish	15	" 1303	==
Slate	70	" 1373	=
SS., gray	6	" 1379	==
Slate	24	" 1403	=
SS., grey, no oil	10	" 1413	=
Slate, black	15	" 1428	==
Red rock	15	" 1443	=
Slate, gray	27	" 1470	=
SS., pebble	5	" 1475	==

Drilled dry. Cased at 510'. Best production, 1,650 barrels per day. Gas sufficient to fire 6 boilers. Green oil. Gravity, 46°.

### 1148. Jenkins Well (No. 2?).

On D. Jenkins' farm, Fairview township, Butler county. Authority, N. B. Parker, contractor.

Well mouth above ocean in feet	<i></i>			
? (Interval unknown)	75	to	75	=
COAL		"	75	=
1	55	"	130	=
COAL		"	130	==
?	305	66	435	=
Limestone, sayLimestone	10	64	445	==
? (containing "60" and "40 foot rocks"	205	66	650	=
SS., Mountain mand	180	"	830	=
1st SS., shells				
2d SS 6				
Slate 3				
SS., fifty foot rock				
Slate. 4				
SS., thirty foot rock				
Boulder 25				
Stray and 3d SS 20				
Soft slate 30				
Interval containing above rocks and slates not				
mentioned	805	"	1635	=
4th SS., 15' in sand	15	66	1650	=

Drilled dry. Cased at 657'. No red rock and no Blue Monday found in this well.

## M'Cafferty Farm Wells.

#### 1873-1876.

On M'Cafferty farm, (H. L. Taylor & Co.,) Fairview township, Butler county. Copied from the books of Mr. Peter Schrieber.

#### 1149. Well No. 2.

1149.	Well IVO.	ú.		
Well mouth above ocean in feet Casing? (Interval unknown) 3d SS. (Third Sandstone)? 4th SS.		460 1035 20 55 18	to 460 " 1495 " 1515 " 1570 " 1588	=======================================
1150.	Well No. 3	•		
Well mouth above ocean in feet				
Well mouth above ocean in leer		450	to 459	=
Casing		1047	" 1506	=
?	••••••			
3d SS		21	" 1527	=
?		53	" 1580	==
4th SS		23	" 1603	=
?	pocket,	19	" 1622	=
1151.	Well No. 4			
Well mouth above ocean in feet				
Casing		428	to 428	==
Casing		1049	" 1477	=
? (Gas at 1382')	•••••	22	" 1499	=
3d SS		58	" 1557	=
?			" 1576	
4th SS	• • • • • • • • • • • • • • • • • • • •	19		$\approx$
***************************************	pocket,	11	·· 1587	$\approx$
1152.	Well No. 5	•		
Well mouth above ocean in feet				
Casing		493	to 493	==
?		1042	" 1535	=
3d SS		20	" 1555	==
30.55	**********	50	" 1605	=
?		23	" 1628	=
4th SS	********			
?	pocket,	18	" 1646	=
	Well No. 6.			
Well mouth above ocean in feet				•••
Casing			to 539	=
*		1023	<b>" 1562</b>	
***********************	• • • • • • • • • • •		2004	_

3d SS	21 52 27	to 1583 " 1635 " 1662	=
Well mouth above ocean in feet Casing. ? (Interval unknown). 3d SS. (Third Sandstone). ? 4th SS. ?	368 1060 21 54 20 15	to 368 " 1428 " 1449 " 1503 " 1523 " 1538	
1155. Well No. 8.  Well mouth above ocean in feet.  Casing. ? 3d SS. ? 4th SS. ?		to 603 " 1531 " 1549 " 1608 " 1626 " 1694	, = = = = =
1156. Well No. 9  Well mouth above ocean in feet.  Casing.  ?  3d SS.  ?  4th SS.  ? pocket,	553 911 20 43 20 12	to 553 " 1464 " 1484 " 1527 " 1547 " 1559	;; = = = = =
Well mouth above ocean in feet  Casing ? 3d SS . ? 4th SS., hard and close, no oil. ? . pocket,	400 1040 24 53 19	to 400 " 1440 " 1464 " 1517 " 1536 " 1546	:::::::::::::::::::::::::::::::::::::::
1158. Well No. 13 Well mouth above ocean in feet	• • • • •	to 525 " 1431	

3d SS., gray, no oil	22	to 1453	=
***************************************	34	" 1487	===
Stray 4th SS., good, gas and oil	14	" 1501	=
********************************	2	" 1503	=
4th SS., good	20	" 1523	==
? pocket,	16	" 1539	==

#### CHAPTER XX.

#### CRISWELL; MONTEREY; BRADY'S BEND.

#### 1159. Boss Well.

July 14, 1874.

On Parker farm, at Criswell City, Perry township, Armstrong county. Authority, Mr. Criswell.

Well mouth above ocean in feet	
? (Interval unknown)	190 to $190 = +1089$
LimestoneLimestone	10 " $200 = +1079$
• · · · · · · · · · · · · · · · · · · ·	200  "400 = +879
Mountain SS. (Sandstone)	200 " $600 = +679$
?	175 " $775 = +504$
SS	50 " $825 = +454$
?	277 " $1102 = + 177$
1st SS	36 " $1138 = + 141$
?	$37 \cdot 1175 = 104$
SS., pebbly	5 " $1180 = \div 99$
9	5 " $1185 = 194$
Red rock	5? " 1190 = ÷ 89
?	107 " 1297 = - 18
2d SS	6 " $1303 = -24$
Red rock.	15 " 1318 = - 39
?	7 " $1325 = -46$
SS	3 " 1328 = - 49
9	7  "  1335 = -56
SS.	5 " $1340 = -61$
7	9 " 1349 = - 70
SS., Blue Monday.	5 " 1354 = - 75
Red rock	5 " 1359 = - 80
7	3 " 1362 = - 83
Slate with 3 hard shells.	13  "  1375 = -96
	10 " $1385 = -106$
Od CC makilm man and oil	10 - 1383 = -108 $12 - 1397 = -118$
3d SS., pebbly, gas and oil	8 " 1405 = -126
The Toronto of Taranta	
Red rock, pale red	
?	15 " $1425 = -146$
SS	5 ". $1430 = -151$

?	32	to 1462	== -	183
SS., say	5	" 1467	= -	188
?	3	" 1470	=-	191
4th SS., 12' in sand	12	" 1482 :	=-	203

Drilled dry. Cased at 411'. Gas at 1,000' and in 3d sand. Shells at 1,224', 1,262', and 1,269', with 3' of red rock between 1,224' and 1,262'.

Best production, 1,900 to 2,500 barrels per day. Green oil.

## Hunter & Cummings' Wells.

August, 1875.

On Wm. Crawford farm, near Criswell City, Perry township, Armstrong county. Authority, Hunter & Cummings.

#### 1160. Well No. 10.

Well mouth above ocean in feet	<i>.</i>	+1329
? (Interval unknown)	100	to $100 = +1220$
COAL	10	" 110 = +1210
9	110	" $220 = +1100$
LimestoneLimestone	15	" $235 = +1085$
?	170	" $405 = +915$
Mountain SS. (Sandstone)	200	" $605 = +715$
?	550	" $1155 = + 165$
2d SS., estimated	<b>3</b> 5	" $1190 = +130$
	216	" $1406 = -86$
3d SS., estimated	15	" $1421 = -101$
Shale	6	" 1427 107
SS., estimated	10	" $1437 = -117$
	63	" $1500 = -180$
SS. shell, estimated	5	" $1505 = -185$
******************************	<b>2</b>	" $1507 = -187$
4th SS	20	" $1527 = -207$

Cased at 433'. Loose pebbles and oil at 1,508'. Oil at 1,514' 8". Stopped in hard, firm shale at 1,527'.

#### 1161. Well No. 9.

Well mouth above ocean in feet			+1384
?	308	to	308 = +1076
LimestoneLimestone	15	"	323 = +1061
? (gas)	775	"	1098 = +286
?	469	44	1567 = -183
SS., shell over 4th SS	5	4.6	1572 = -188
?	3	"	1575 = -191
4th SS	18	"	1593 = -209
? pocket,	25	66	1618 = -234
Oil at 1,576'.			

#### 1162. Cummings Well, No. 1.

#### March, 1874.

On Adam Peters farm, Perry township, Armstrong county. Copied from Hunter & Cummings' books.

Well mouth above ocean in feet			+1230
-? (Interval unknown)	30	to	30 = +1200
COAL		"	30 = +1200
?	55	"	85 = +1145
COAL		"	85 = +1145
?	34	"	119 = +1111
LimestoneLimestone	15	66	134 = +1096
7	181	4.6	315 = +915
Mountain SS	183	66	498 = +732
?	20	4.6	518 = +713
SS., stray	41	46	559 = +671
?	115	"	674 = +556
SS., stray	76	"	750 = +480
?	334	"	1084 = + 146
1st SS	35	"	1119 = +111
Red rock	5	"	1124 = +106
?	81	"	1205 = + 25
SS	12	"	1217 = + 13
7	7	"	1224 = + 6
2d SS	15	"	1239 = -9
Red rock	40	"	1279 = -49
?	28	"	1307 = -77
3d SS	24	"	1331 = -101
?	41	"	1372 = -142
Red rock	8	"	1380 = -150
SS., pebbly	2	"	1382 = -152
? (including boulder)	18	"	1400 = -170
4th SS	25	"	1425 = -195
Red rock, very red	10	"	1435 205
Slate	8	46	1443 = -213
SS., hard and gray	8	"	1451 = -221
Slate, red on top, then black	40	"	1491 = -261

Drilled dry. Cased at 384'. Gas sufficient to fire several boilers.

Best production, 4 barrels per day.

Three feet of "corn meal pebble" at top of 4th SS., from 1,400' and 1,403'. One foot of slate at 1,413'. Hard streak and first show of oil at 1,415', and second show at 1,419'.

## 1163. Monterey Well, No. 1.

1875.

On J. B. Binkerd farm, about 2 miles north of Criswell City, Perry township, Armstrong county. Authority, W. J. Brundred.

Well mouth above ocean in feet				
? (Interval unknown)	25	to	25	-
LimestoneLimestone	20	46	45	=
? (3' feet of coal at 70')	35	"	80	===
SS. Sandstone)	20	"	100	=
SS. and shells (1 foot of coal at 210')	100	44	200	_=
SS	39	"	239	=
Slate	10	46	249	=
Mountain SS	300	"	549	===
Slate, shale and shells	67	"	616	=
SS. (oil show)	20	"	636	=
? (stinking gas)	327	"	963	=
SS	10	££	973	=
Slate	22	"	995	=
SS. (oil show)	35	"	1030	=
Red rock	4	"	1034	=
SS	56	"	1090	==
Red rock	24		1114	===
2	25	66	1139	=
SS., hard	12	"	1151	553
Red rock	5	66	1156	=
Slate	35	66	1191	:::
SS. shell	1	"	1192	=
Slate	4	"	1196	===
SS., green and pebbly	9	"	1205	==
Red rock	5	"	1210	==
SS., blue and hard	1	"	1211	=
Slate, shells and red rock	20	"	1231	=
3d SS. (oil show at 1250')	20	"	1251	=
Slate, green and sandy	5	"	1256	==
SS., gray and white	8	"	1264	===
Blue slate and red rock	28	46	1292	-
SS., shells and pebbles	10	46	1302	
Slate	14	46	1316	==
4th SS. (gas, 1321'; oil, 1324')	13	66	1329	=
Slate	9	66	1338	=
4th SS. (gas and oil at 1340')	4	"	1342	==
Slate, shells and red rock	52	66	1394	=

This well was unproductive.

## 1164. Monterey Well, No. 2.

1875.

On J. K. Binkerd farm, 2 miles north of Criswell City, Perry township, Armstrong county. Authority, W. J. Brundred.

	5 7			
Well mouth above ocean in feet				
? (Interval unknown)	16	to	16	=
COAL	4		20	==
Slate, shelly	47	"	67	=
LimestoneLimestone	20	"	87	==
Slate	16	"	103	=
COAL	3	46	106	=
Slate	8	"	114	=
COAL	4	"	118	=
Slate, shelly	18	"	136	==
SS. (Sandstone) white	30	"	166	=
Slate, shelly.	28	"	194	=
SS	8	66	202	
Slate, shelly	60	"	262	=
SS., dark gray and hard	13	"	275	=
Slate	1	"	276	==
SS. (salt water at 277')	160	66	436	=
Slate	188	"	624	
1st SS., gray and loose (gas at 609')	60	"	684	==
Shelly slate	356	"	1040	=
2d SS	4	"	10 <del>11</del>	=
Red rock	4	"	1048	==
SS., slate and sheils	52	"	1100	==
Red rock	6	"	1106	=
SS., blue	4	**	1110	=
Slate	30	"	1140	=
SS., gray	15	"	1155	==
Slate	5	"	1160	=-
Red rock	18	"	1178	
Slate, shelly	46	"	1224	=_
SS., hard	8	"	1232	=
Slate	2	"	1234	===
SS., hard	19	"	1253	=
Slate	15	"	1268	=
SS., pebbly	1	" j	1269	=
Slate	٠ 4	"	1273	=
3d SS. (oil show)	8	" ]	1281	==
Slate	2	"	1283	=
Slate, shelly	18	"	1301	=
Red rock	5	"	1306	=
Slate, shelly	22	"	1328	=
SS., gray	4	"	1332	=
Slate	1	"	1333	=
4th SS	20	" ]	1353	=
Slate	10	";	1363	=

SS., pebbly	3	to 1366	+
Slate, black		" 1390	+
Red rock	18	" 1408	+
Slate	16	" 1424	+

Drilled dry. Cased at 287'. Gas at 609'. No oil.

#### 1165. Well No. 4.

1870.

On the tract of the Brady's Bend Iron Company, Brady's Bend township, Armstrong county. Authority, J. P. Lesley.

Well mouth above ocean in feet		• • • •	+ 850
? (Interval unknown)	50	to	50 = +800
SS. (Sandstone)	190	"	240 = +610
?	658	"	898 = -48
SS,	49	46	947 = -97
Slate-gray SS. at 965', black rock 992'	51	"	998 = -148
SS., black at 998', gray at 1,000'	15	"	1013 = -163
Slate	25	**	1038 = -188
SS., hard	88	"	1126 = -276
SS., red SS	10	"	1136 = -286
SS., black	5	"	1141 = -291
SS., gray	3	"	1144 = -294
Shale, mud rock	1	44	1145 = -295
Slate	115	46	1260 = -410

Shelly at 1,148', 1,172' and 1,211'. Trace of oil at 1220'. Unproductive.

#### 1166. Well No. 5.

1870.

On the tract of the Brady's Bend Iron Company, Brady's Bend township, Armstrong county. Authority, John Worthington.

Well mouth above ocean in feet			+ 852
7			45 = +807
Mountain SS	170	"	215 = +637
?	110	"	325 = +527
SS., gray			395 = +457
Slate			715 = + 137
SS			735 = +117
Slate			750 = + 102
Red rock			755 = + 97
?			775 = + 77
SS., pebbly on top			785 = + 67
Slate			795 _ + 57

ss	10	to	805 = +47
Red rock	3	"	808 = +41
SS., gray	12	"	820 = + 32
Slate,	2	"	822 = + 30
SS	4	44	826 = + 26
Red rock	1		827 = + 25
ss	73	"	900 = -48
?	30	"	930 = -73
Red rock	9	"	939 = -87
SS., shelly at 948'	15	44	954 = -102
?	11	"	965 = -113
Slate	7	+ 6	972 = -120
Red rock	14	"	986 = -131
SS	29	66	1015 = -163
Dark rock	11	"	1026 = -174
SS., gray, 3' red on top	24	46	1050 = -198
Slate, shelly at 1,055'	25	"	1075 = -223
3d SS	5	"	1080 = -228
Slate and shells	4	"	1084 = -232
SS., pebbly	6	"	1090 = -238
SS	10	"	1100 = -248

Soft at 460', gray at 490', shelly at 530' and 640'. White SS. 827'-835', gray to 848', blue at 850', black at 860'.

Bost production, 7 barrels per day.

#### CHAPTER XXI.

#### PETROLIA TO ST. JOE.

#### 1167. Nesbitt Well, No. 1.

On J. Blaney farm, near Petrolia, Fairview township, Butler county. Authority, -----

Well mouth above ocean in feet			+1179
Conductor	15	tο	15 = +1164
LimestoneLimestone	25	"	40 = +1139
COAL, estimated	2	66	42 = +1137
SS. (Sandstone) green	65	44	107 = +1072
? (Interval unknown)	293	66	400 = +779
Mountain SS	140	"	540 = +639
? (with 1st SS., and 2d SS., and large red			
rock)	656	**	1196 == - 17
SS., boulder	35	"	1231 = -52
Slate	25	44	1256 = -77
Stray SS	15	66	1271 = - 92
Slate	10	"	1281 = -102
3d SS	22	66	1303 = -124
? (with slate and red rock)	67	"	1370 = -191
4th SS. (with 6' slate near middle)	30	"	1400 = -221

Drilled dry. Cased at 440'.

Best production, 900 barrels per day; 4th sand oil.

### 1168. Hazelwood Well, No. 13.

On Sheakley farm, near Petrolia. Copied from Company's books.

Well mouth above ocean in feet		<i>.</i>	+1226
7	420	to	420 = +806
Mountain SS			
Slate	20	**	600 = +626
Shells	75	46	675 = +551
Slate	50	"	725 = +501

Shells	10	to $735 = +491$
Slate, shelly	165	" $900 = +326$
1st SS	25	" $925 = +301$
Slate	160	" $1085 = +141$
2d SS	24	" $1109 = +117$
Slate, shelly	16	" $1125 = +101$
SS., fifty foot rock	35	" $1160 = + 66$
Stray SS. and shell	40	" $1200 = + 26$
SS., Blue Monday.,	8	" $1208 = + 18$
Slate, shelly	7	" $1215 = + 11$
Red rock	15	" $1230 = -4$
Slate, shelly	15	" $1245 = -19$
Red rock	5	" 1250 — — 24
SS., boulder	50	" $1300 = -74$
Slate	20	" 1320 = - 94
Shell	5	" $1325 = -99$
3d SS	35	" $1360 = -134$
Slate, with shells and red rock	60	" $1420 = -194$
4th SS., 3' in the sand	3	" $1423 = -197$

## 1169. Spence Well.

On Wilson farm, Fairview township, Butler county. Authority, ———.

Well mouth above ocean in feet			<u>+1206</u>
? (Interval unknown)		to	
COAL	4	44	24 = +1182
?	36	"	60 = +1146
COAL	5	"	65 = +1141
?	10	"	75 = +1131
Limestone, estimated Limestone	10	46	85 = +1121
?	815	"	900 = +306
1st SS. (First Sandstone)	35	"	935 = +271
?	185	"	1120 = + 86
2d SS	20	"	1140 = + 66
Slate	30	"	1170 = + 36
SS., fifty foot rock	50	44	1220 = -14
Red rock	3	"	1223 = -17
Slate	27	"	1250 = -44
SS., thirty foot rock	30	44	1280 = -74
?	35	"	1315 = -109
SS;, boulder thickness unknown		"	=
?	25	44	1340 = -134
3d SS	30	"	1370 = -164
Slate	26	"	1396 = -190
£th SS	25	"	1421 = -215

## 1170. Mattison and M'Donald Well.

#### December 4, 1875.

On M'Clyman's farm, Fairview township, Butler county. Authority, John Davitt.

Well mouth above ocean in feet			+1244
Conductor (?) 10', shale 4', COAL 4'	18	to	18 = -1226
Slate	23	44	41 - +1203
COAL	4	66	45 = +1199
Slate	25	"	70 = +1174
Bl iff SS. (Sandstone)	75	44	145 = +1099
Slate	20	"	165 = +1079
LimestoneLimestone	20	"	185 = +1059
Slate	143	"	328 = +916
SS., forty foot rock	40	46	$368 = \div 876$
Slate	110	"	478 = +766
Mountain SS	150	66	$628 = \div 616$
Slate	122	66	750 = +494
1st SS	20	"	770 = +474
S'ate	200	45	970 = +274
SS,	10	**	980 = +264
State	185	66	$1165 = \div 79$
2d S3	20	"	$1185 = \div 59$
Red rock	5	66	$1190 = \div 54$
Slate	80	"	1270 = -26
SS., Blue Monday	10	"	1280 = -36
Red rock	20	66	1300 = -56
Slate	20	ξě	1320 = -76
SS., boulder.	10	66	1330 = -86
Slate.	20	"	1350 = -106
Stray 2d SS	25	66	1375 = -131
Slate.	15	66	1390 = -146
31 SS	12	"	1402 158
Slate.	58	"	1460 = -216
Stray 4th SS	8	66	1468 = -224
Slate.	2	66	1470 = -226
4th SS., 20' in sand	20	" ]	1490 = -246

Cased at 470'. Gas sufficient to fire one boiler. Best production, 75 barrels per day. Amber green oil.

## 1171. Emerson & M'Cloud Well, No. 1.

On L. Riddle farm, about one-half a mile south of Karns City. Authority, ——.

Well mouth above ocean in feet		<i>.</i> .			
•					
COAL	3	44	83	=	+1166
*	117	"	200	==	+1049

SS., bluff sand	100	to	300	=	+949
?	. 50	"	350	=	+899
Limestone					+ 889
?	390	"	750	=	+ 499
1st SS	40	"	790	=	+459
?	360	"	1150	=	+ 99
2d SS	30	"	1180	=	+ 69
?	254	"	1434	=	185
3d SS	20	"	1454	=	<b>—</b> 205

#### 1172. Stoughton Well, No. 2.

On Widow Hemphill farm, Donegal township, Butler county. Authority, ————.

Well mouth above ocean in feet					+1	176
Conductor	20	to	20	=	+1	156
Bluff SS., estimated	20	"	40	=	+1	136 '
? (Interval unknown)			1150			
2d SS. (Second Sandstone)	20	"	1170	==	+	6
?	165	"	1335	=		159
Shells, "Blue Monday, Boulder or 50"						
rock"	50	"	1385	==	:	209
Shale	5	"	1390	=	:	214
Stray, 3d SS	10	66	1400	==	5	224
?	20	cc	1420	==	5	244
3d SS	12	44	1432	=	5	256
? pocket,	8	"	1440	=		264

Drilled Dry. Cased at 500'.

#### 1173. Mead Well.

On Now farm, near St. Joe, Donegal township, Butler county. Authority, Mr. Wyatt; from memory.

Well mouth above ocean in feet				+1294
?	40	to	40	=+1254
COAL	5	"	45	= +1249
?	300	"	345	= + 919
LimestoneLimestone	20	€ €1	365	= + 929
?	35	66	400	= +894
SS., 60' rock	60	66	460	= + 834
	35	66	495	= +799
SS., 40' rock	40	"	535	= +759
Slate	20	"	555	= +739
Mountain SS. Cased at 537'	175	"	730	= + 564
Slate	405	56	1135	= + 159
Ist SS	25	66	1160	= + 134
Slate	110	"	1270	=+24

2d SS. (Second Sandstone)	25	to 1295	== 1	
Red rock			=- 6	
SS., 50' rock	40		= $-$ 46	
Slate	20		= - 66	
SS., 30' rock	25		= - 91	
Slate	40		= - 131	
SS., boulder	20		= -151	
Slate			<u> </u>	
SS., Blue Monday			= - 166	
Slate			= -206	
Stray 3d SS	30		= - 236	
Slate	25		= - 261	
3d SS., 10' in sand			= - 271	

#### CHAPTER XXII.

## SOUTH OF ST. JOE.

# 1174. Parker and Overy Well. April 5, 1876.

On Peter Duffy farm, south-west corner of Donegal township, Butler county. Authority, John Davitt.

Well mouth above ocean in feet				
? (Interval unknown)	9	to	9	=
Surface SS. (Sandstone)	• 50	66	59	=
COAL	3	"	62	=
Bluff SS	10	"	72	=
Slate, black	249	"	321	=
LimestoneLimestone	20	"	341	=
Slate, black	74	"	415	_
SS., "60' rock"	30	"	445	=
Slate	50	٤	495	=
SS., "40' rock"	30	11	525	
SS., "Mountain sand"	445	"	970	=
Slate	205	66	1175	==
1st SS., gas sand	15	"	1190	=
Slate, with hard black shells	130	"	1320	=
2d SS	20	"	1340	=
Slate	5	"	1345	=
Red SS	2	"	1347	=
SS., "50' rock"	34	"	1381	=
Slate	1		1382	
SS., "30' rock"	25		1407	
Slate	60	"	1467	=
SS., "Blue Monday"	10	įı	1477	_
Shale	2	•	1479	=
SS., boulder	13	"	1492	==
Slate	40			=
Stray 3d SS	20	66	1552	=
Slate	13		1565	
3d SS	19			=

Cased at 525'. Gas sufficient to fire 2 boilers. Best production, 50 barrels per day.

## 1175. Thompson Gas Well.

1875.

Robert Thompson farm, Clearfield township, Butler county, 2 miles south of St. Joe, and adjoining the Easterling farm. Authority, S. M'Gara.

Well mouth above ocean in feet			. <i></i>	+1162
Conductor	15	to	15	= +1147
Slate	8	"	23	= +1139
SS., surface sandstone, coal show 30'	100	46	123	= +1039
Slate, good drilling	92	"	215	= + 947
Limestone, soft and poor Limestone	15	"	230	= + 932
Slate, good drilling	60	"	290	= +872
SS.(Sandstone) white, "open"	40	"	330	= + 832
Slate	60	"	390	= +772
SS., "60' SS.,"	90	"	480	= +682
Slate	50	66	530	= +632
Mt. SS., little salt water top and bottom	210	"	740	= +422
Slate	100	"	840	= +322
SS., little salt water and gas	22	"	862	= +300
Slate, shelly	150	"	1012	= + 150
SS., very hard	22	"	1034	= + 128
Slate, shelly	143	"	1177	== <u>1</u> 5
SS., very dark, little salt water	15	66	1192	<del>-</del> - 30
Red rock, very hard	7	66	1199	= - 37
Slate	8	66	1207	= -45
SS., "50' rock," top, hard; bottom, soft	50	"	1257	= - 95
Slate	20	"	1277	= -115
SS., "30' rock," red at bottom	20	"	1297	= -135
Slate	60		1357	= -195
SS. white	5		1362	<b>— — 2</b> 00
Red rock, hard	15	66	1377	= -215
SS., boulder	10		1387	= -225
Slate	38		1425	= -263
SS., "Corn-meal" or stray, good	21	"	1446	
Slate	10		1456	
3d SS., (measured)	30			324
?	52	_		= -376
4th SS., gas, no oil	20?	"	1558?	= -396

Drilled dry. Cased at 461'. The 3d SS., was full of small pebbles near its top, but became fine, white and sharp toward the bottom. Oil was struck near the top of this sand. The well was tubed and pumped for four months, producing 8 barrels per day of good lively oil. The tubing was then drawn and the drill run down to the 4th SS., which was found at 1,538'. A powerful vein of gas was encountered here, the rig caught fire and burned down, and as there is no oil with the

gas the well is now only used as a gas well, supplying fuel to 15 or 20 boilers in the neighborhood.

# 1176. Dugan Well.

October, 1876.

Near Jeffersonville, Clearfield township, Butler Co., near the Humes Well. Authority, Mark Spellacy; from memory.

Well mouth above ocean in feet				
Conductor	11	to	11	==
SS. (Sandstone)	100	"	111	=
Slate, with limestone and cannel coal	139	"	250	=
SS. (30' of slate in middle)	275	"	525	=
Slate	125	"	650	=
Slate, shelly, with small sands	720	"	1370	=
2d SS. (salt water and show of oil)	70	"	1440	=
Slate	10	"	1450	=
SS., "50-foot rock," small streak red	40	"	1490	=
Slate	15	"	1505	=
SS., 30-foot rock	12	"	1517	=
Slate	25	46	1542	=
SS., Blue Monday	10	"	1552	=
Red rock	12	"	1564	=
SS., boulder	15	"	1579	=
Slate	25	"	160 <del>1</del>	=
Stray SS. (a)	38	? "	1642 7	=
Slate	18 9	? "	1660 3	=
3d SS	30 2	"	1690 ?	<b>'</b> =
Slate	40	? "	1730 %	=
SS	20	? "	1750 ?	=

Drilled dry. Cased at 525'.

(a) The well was drilling in this sand at the time the record was given, and the remaining figures are supposititious. They show the position and thickness of the strata as Mr. Spellacy expected to find them if they agreed with his idea of the same rocks in the Humes Well, which was about one-fourth of a mile from the Dugan.

# 1177. Humes, or O'Connor Well.

Clearfield township, Butler county.	$\mathbf{A}\mathbf{u}$			
Well mouth above ocean in feet				1124
?	85	to	85 ==	1039
Coal	2	46	87 =	1037
?	1188	"	1275 == -	- 151
0.8 0.0			1245	

Slate	4	to $1349 = -225$
SS., red rock	8	" $1357 = -233$
Slate	40	" $1397 = -273$
?	100	" $1497 = -373$
SS., boulder	25	" $1522 = -398$
Slate	10	" $1532 = -408$
?	20	" $1552 = -428$
SS., stray, pebble and sand	37	" $1589 = -465$
Slate	3	" 1592 <u> </u>
3d SS	27	" $1619 = -495$
Slate	18	" $1637 = -513$
SS., blue	6	" $1643 = -519$
Siate shell	36	" $1679 = -555$

[The accuracy of the above record may be questioned. The latter part at least seems somewhat doubtful.

Mr. Wiser, who has sunk several wells near by, says the Humes struck oil at 1,573′, and pumped about 18 barrels per day for some time. It was afterwards put down about 100′ deeper, passing through a close, fine, gray sandstone, but getting no increase of oil or gas.

The Stoughton & Wiser Well, quite near and 18' below the Humes, found the sand at 1,560' and passed through it at 1,572'. The indications were unfavorable and it was abandoned, although he thinks it might have been made to pump 3 or 4 barrels of oil per day.

The Barton Well, also close to the Humes, and 120' higher, was drilled to 1,925'. It was a failure. The Humes oil rock was found in proper place, but yielded nothing. From 35' to 60' below it another sand was passed through. This was 13' thick, but fine, close and dry. Below this there was only slate.]

# 1178. Hunter Well.

### 1875.

On Schneure farm, Summit township, Butler county. Authority, one of the drillers; from memory.

Well mouth above ocean in feet			+1191
? (Interval unknown)			200 = +991
		"	200 = +991
?	215	"	415 = +776
Limestone, hard-measured Limestone	20	"	435 = +756
?	165	"	600 = +591
Mountain SS. (Sandstone) shelly	60	"	660 = +531
?	670	44	1330 = -139

1st SS., shelly	40	to $1370 = -179$
? (containing red rock, boulder and stray)	275	" $1645 = -454$
3d SS	17	" $1662 = -471$
Slate	6	" $1668 = -477$
Stray 4th SS	10	" $1678 = -487$
Slate	37	" 1715 — — 524
4th SS., close	20	" $1735 = -544$

Drilled dry. Cased at 605'.

No 2d SS. noted in this well. There was 15' of boulder with 8' of red rock overlying it.

Best production, about 6 barrels per day. Amber-green oil. Gravity, 46°.

[Mr. Stephen Harley, one of the owners, varies the record thus—3d SS., from 1,635, to 1,650; 4th SS., from 1,690' to 1,702'. J. F.C.]

# 1179. Saxon Station Gas Well.

# Spring of 1874.

At Saxon Station, on the Butler Branch RR., Winfield township, Butler Co. Authority, Mr. Helmbold; from memory.

Well mouth above ocean in feet		+1199
? (Interval unknown)	270	to $270 = +929$
Limestone, black (sandstone?)	60	" $330 = +869$
?	820	" $1150 = +49$
1st SS. (First Sandstone) gas in top	50	" 1200 = - 1
?	220	" $1420 = -221$
2d SS	40	" 1460 = - 261
?	240	" $1700 = -501$
3d SS., shelly and poor	10	" $1710 = -511$
? (to bottom of well)	147	" $1857 = -658$

Drilled dry. Cased at 580'. Gas sufficient to fire 30 boilers. No oil.

The gas flows from the 1st SS. When first struck it ignited and burned down the rig. Deeper drilling did not appear to increase its volume. It still flows with very little, if any, apparent abatement of force [June, 1875.]

# 1180. Thorn Creek Well.

## About 1873.

Two miles west of Saxonburg, Jefferson township, Butler county. Authority, F. A. Conkle.

Well mouth above ocean in feet				
? (Interval unknown)	200	to	200	=
Limestone (?)	20	"	220	=_
?	260	"	480	=
LimestoneLimestone	20	**	560	=
?	730	"	1230	=
SS. (show of oil) estimated	40	"	1270	=
?	155	"	1425	=
SS., pebbly	25	"	1450	=
?	35	"	1485	=
SS. (gas and oil show)	40	££	1525	=
Slate	25	46	1550	==
SS., pebbly, colored	17	"	1567	==
Slate	33	46	1600	
SS	35	"	1635	
Slate	40	"	1675	=
SS. (oil show)	20	"	1695	=
Slate	130	"	1825	=

Drilled dry. Cased at 720'. But little gas. No oil.

# 1181. Harvey Gas Well.

1874-5.

Near Larden's Mills, Clinton township, Butler county. Authority, Mr. Smith, driller and part owner.

Well mouth above ocean in feet		• • • •		
Conductor	8	to	8	==
Slate	20	"	28	=
COAL	6	"	34	=
Slate	46	"	80	==
SS	50	"	130	=
Shale	80	"	210	=
SS	20	"	230	-
Shale	50	"	280	=
Limestone, blackLimestone	15	"	295	==
COAL.	5	"	300	
Slate	80	"	380	=
SS	20	"	400	=
Slate	20	66	420	==
SS., "Lightning rock," "Blue Monday"	100	"	520	=
Slate, black (with gas)	40	"	560	==
Slate and shale	100	"	660	=
Mountain SS. (salt water)	160	"	820	==

Slate	25	to	845	=
SS	40	"	885	=
Shells	15	"	900	=
SS	20	"	920	=
Slate	180	"	1100	=
SS. (gassy)	15	"	1115	=
Slate	5	"	1120	=
SS., gray (salt water and gas)	20	"	1140	=

Drilled Dry. Cased at 720'. Flowing a tremendous amount of gas, under a pressure of about 250 pounds per square inch.

# 1182. Mahan Well.

1875.

On Mahan farm, Middlesex township, Butler Co. Hart & Conkle, owners. Authority, F. A. Conkle.

2011-109 011 11-11-11-11-11-11-11-11-11-11-11-11-1				
Well mouth above ocean in feet				
? (Interval unknown)	200	to	200	==
COAL	4	46	204	=
<b>9</b>	86	6.	290	=
COAL	2	"	292	_
Slate.	3	44	295	Ė
Limestone, blackLimestone	20	"	315	=_
?	325	"	640	==
Coal	8	"	648	==
7	27	"	675	
SS., "white limestone" and SS., vory hard	90	"	765	=
7	385	**	1150	=
Slate and sand shells.	100	46	1250	
?	100	66	1350	==
SS. (fresh water)	60	**	1410	-
7	60		1470	=
SS., black and loose (amber oil and salt water)	10	"	1480	
SS., gray	50	66	1530	
?	15	46	1545	=
Red rock	10	"	1555	==
?	10	"	1565	=
SS., boulder	20	66	1585	=
?	38		1623	==
SS., pebbly, "corn meal or clover seed"	37		1660	==
Slate.	40		1700	==
SS., pebbly, "pink clover seed"	25		1725	=
a.	15		1740	=
SS., fine and white (oil)	15		1755	=
Slate.	30		1785	=
DAMOUTO	30		1,00	

Drilled dry. Cased at 660'.

The 15' SS. at 1,740'-1,755' yielded oil of a dark brown color and 41° gravity for a few days, at the rate of about 10 barrels per day. The well is still drilling [June 6, 1875].

# CHAPTER XXIII.

### MISCELLANEOUS WELLS.

# 1183. Well No. 1.

## Fall of 1865.

On Hall (now Moses) farm, at Limestone, Carrollton township, Cattaraugus county, New York. Authority, Job Moses.

1,				•
Well mouth above ocean in feet			• • • • •	
Conductor	29	to	29	=
Slate	55	66	84	=-
SS. (Sandstone) hard	10	66	94	=
Slate, very soft	10	"	104	=
SS., hard and flinty	6	"	110	=
Slate, shells at 137' and 144'	64	"	174	==
SS	12	"	186	=
Slate, with shells from 10" to 3' thick	34	"	220	=
SS., gray and coarse	25	"	245	=
Slate	9	"	254	=
SS., hard and white, salt water and soot	24	66	278	==
Slate, with soot and gas	55	"	333	=
SS., pebbly, soft, white and brown	20	"	353	=
Slate, with shells, gas and soot	180	44	533	=
SS., hard and flinty	2	"	<b>5</b> 35	=
SS., light brown, fine oil show	45	"	580	==
Slate, with shells, tested at 587'	110	"	690	=
Slate, "hard blue gritty rock,"	2	"	692	=
SS	13	"	705	=
Slate	350	"	1055	==
SS., two crevices	6	66	1061	=
SS., blue and dark	17	"	1078	=
Slate, sandy	52	"	1130	=
Slate, soft	350	"	1480	==
SS., "nice sand,"	15	"	1495	=
Slate	5	"	150 <b>0</b>	=

Gas and oil show at 340', and again at 1,058'.

The 15' sand found at 1,480' was not found in two other wells drilled near this one.

This well was a 4½" hole, and drilled wet. It produced but little oil.

# 1184. Card Well No. 2.

1866.

Card farm, 2 miles north-east of Clymer, Chautauqua county, N. Y. Authority, Captain Robert Hood.

Well mouth above ocean in feet				• • •	
Conductor, through gravel	36	to	36	=	
Sandstone	13	44	49	=	
Slate, hard	20	"	69	==	
Sand shells	20	"	89	=	
Slate	7	**	96	=	
Sand and slate in thin alternate layers	75	44	171	=	
Slate, very soft	20	66	191	==	
Sand shell, very hard, white and pebbly	5	60	196	===	
Shelly	62	4.6	258	=	
Sand shell, (10" crevice, oil show)	3	44	261	=	
Soapstone and slate	10	"	271	==	
Sand shell, (best show of oil)	4	"	275	===	
Grev and red rock	18	41	293	=	
Slate	18	"	311	==	

Wet hole. Unproductive. Salt water at 86'. Show of oil and gas at 96'. Crevice of 4" at 169'. Oil show at 245'.

Oil Creek Lake, Lumber and Mining Co.'s Wells, Lakeville, Bloomfield township, Crawford county. Authority, Thomas L. Dobbins.

# 1185. Well No. 1.

# (Near Saw Mill).

Drilled April to October, 1865.

Well mouth above ocean in feet, about	••••		• • • • •	1400
Drive pipe	13	to	13	=
Slate or shale	100	"	113	==
Rock, hard blue, water vein	1	".	114	=
SS. crust	1	66	115	<b>=</b> ,
Slate and shale	48	"	163	_
Slate, blue	100	"	263	===
Rock, (probably sand,) hard	52	"	315	==
Slate and gray sand	50	66	365	==
SS. white, (lst SS., ) oil show	2	"	367	===
Soapstone, and soft blue slate with hard streak,	63	66	430	=
Slate, gray, with white sand shells	37	"	467	
Slate, blue	33	46	500	===
Slate, blue, with flint and white sand	36	64	536	
Shale and gritty sand shells	14	"	550	=

Slate	55	to	605	=	
Slate, with threads of gray sandstone	370	"	975	=	
Wet hole. Never tubed nor pumped.					
Show of oil at 180', 367' and 506'. S	ome	ga	s at	542	"

# 1186. Well No. 2.

(Near Oil Creek Lake and R. R. water tank).

Drilled January 4th to March 20, 1866.

# Authority, Thomas L. Dobbins.

Well mouth above ocean in feet, about				1405
Drive pipe, through coarse gravel and blue clay,	30	to	30	=
Soapstone, light blue, and slate, with hard				
streaks	103	4.6	133	
Blue slate and sand shells	15	"	148	=
Slate, blue, with hard streaks of sand	80		228	=
Slate, blue	50	* *	278	=
Slate, red	15	"	293	=
Slate, blue	80	44	373	=
SS. (Sandstone) white, show of oil	2	44	375	=
Slate, blue	6	66	381	=
SS. and pebble, very hard, estimated	5		386	
Slate, soft, with hard streaks	114	"	500	=
Slate, blue and rather hard	88	-4	588	=
Rock, very hard	2	66	590	==

Wet hole. Never pumped.

At about 100', oil soot and show of oil, (same as other well at same depth). At 125', hard streaks and better show of oil. One foot crevice and water at 142'. Fair show of oil at 383'. Gas at 450'.

# 1187. Dr. Gibson Well.

1875.

In the village of Jamestown, Mercer county, Pa. Authority, Dr. William Gibson.

Well mouth above ocean in feet			1060?
Slaty soapstone and hard shells	90	to	90 ==
Sandstone, blue, fine		66	110 ==
Slate, blue		46	175 ==
2d SS., estimated	25	44	200 ==
Slate, blue	90	66	290 =
3d SS	18	**	308 ==
Soft slate and soapstone	92	"	400 ==
Red rock and hard shale	100	"	500 ==

Hard, sandy slate	50	to	550 =
Black slate	200	"	750 =
	315	46	1065 =

Drilled dry. Cased at 260'. Little show of gas in 2d SS., which was coarser and of a lighter color than the 20' sand above. Struck oil at 295'. The tools were stuck shortly after, and a gallon or more of oil accumulated in the well while waiting for fishing tools. It was of a very dark amber color, and of 29° gravity. The 3d SS. was coarse and pebbly, and pronounced to be first-class oil rock by all who saw it.

# 1188. Wheeler Well.

1873.

Near the town of Mercer, in Jefferson township, Mercer county, Pa. Authority, one of the owners; from memory.

Well mouth above ocean in feet			
Conductor	15	to	15 =
Sandstone	30	"	45 =
Shale	184	"	229 =
Sandstone	40	"	269 =
Shale	431	"	700 =
Sandstone	30	44	730 =
Soft shales	972	"	1702 =

Wet hole. Quite a flow of gas struck at 705'.

There was considerable red rock in the well, but the depth or thickness could not be remembered.

# 1189. Shenango Iron Company's Gas Well. October, 1875.

On the flat near the furnaces at New Castle, Lawrence county, Pa. Authority, Reis, Brown and Berger.

Well mouth above ocean in feet, approximately.			+ 800	
Gravel			15 <del>_</del>	
Blue mud and quicksand	125	"	140 ==	
Slate rock	3	"	143 =	
Slate	61	"	204 =	
Sand shale	54	"	258	
Slate rock	54	"	312 ==	
SS., gray.	44	"	356 ==	
Slate	26	"	382 ==	
SS., white, salt water and oil	78	"	460 ==	
Slate	35	"	495 ==	
Red rock	70	66	565 ==	

# 276 I.I. OIL WELL RECORDS. J. F. CARLL, 1877.

Slate	151	to 716 =
SS	43	" 759 ==
Slate	70	" 829 <del>=</del>
Sand shales	30	" 859 =
Slate	75	" 934 ==
SS.,gray	31	" 965 <del></del>
Red rock	3	" 968 ==
Slate	19	" 987 ==
Slate	207	" 1191 <del>-</del>
Shales, hard	21	" 1215 =
Slate, hard	155	" 1370 =
Sand shales	47	" 1417 ==
Slate, hard	68	" 1485 =_
SS., gray	50	" 1535 ==
Slate	154	· 1689 ==
SS., gray	8	" 1697
Slate.	64	" 1761 =
SS., gray	15	" 1776 =
Slate	69	" 1845 _=
SS.,gray	17	" 1862 =
Slate	103	" 1965 ==
SS., gray.	80	" 2045 ==
? about	655	" 2700 ==

Drive pipe, 143-7.12'. Cased with  $5\frac{5}{8}''$  casing at 468'.

Gas at 313', 617,' 657' and 717'.

Salt water and oil show at 395'.

This oil is of 32° gravity, dark, and very much like the Franklin oil. It comes to the surface with the salt water which flows constantly between the casing and drive pipe, but there is not a sufficient yield to pay for the trouble of collecting it. It is supposed to come in at, or near, the horizon of the salt water. When this well was completed there was a considerable flow of gas. It was then used to light one of the shops. The yield at present is very small.

This well was first drilled to 1,965', but was afterwards sunk to 2,700'. From 1,965' to 2,700' there was no apparent change in the rocks, which consisted mainly of hard, dark slates, with occasional sand shells.

# 1190. Laughlin Well.

## 1870. (?)

On Scrubgrass creek, Pine township, Armstrong county. Authority, F. B. and A. Laughlin.

Well mouth above ocean in feet				
? (Interval unknown)	175	to	175	=
SS. (Sandstone) white and fine, estimated	30	"	205	=
Slate, dark and soft	20	" "	225	=
Slate, dark, with coal seam	10	"	235	=
Slate, dark and sandy	30	"	265	==
SS., gray and hard, estimated	20	"	285	=
?	82	44	367	=
Red rock	3	"	370	=
Slate	2	"	372	=
SS., blue	87	"	459	=
Slate (?)	76	"	535	=
Red rock	4	"	539	=
Slate, blue and sandy	35	"	574	=
SS., top blue, bottom coarse	26	"	600	=
Slate (?)	25	"	625	=
SS., fine	15	"	640	=
Slate, sandy	20	46	660	==
SS., fine	13	"	673	=
SS. and slate, shells	117	"	790	=
SS	15	"	805	=
?	200	"	1005	=
SS., with large pebbles, estimated	10	"	1015	=
?	395	"	1410	=

Wet hole. Crevice at 96'. Salt water at 295' and 335'. Gas at 462', ("heavy flow,") 481', 590', and heavy again at 1,010'. Oil show at 805' and 864'. Show of heavy gravity oil at 1,220', and green oil at 1,405'. Mouth of well at 20' below Ferriferous limestone.

# 1191. Leechburg Gas Well.

## July 3, 1871.

On the Kiskiminetis river, in Westmoreland county, opposite the town of Leechburg. Well mouth about 15' below the level of W. Penn railway depot. Authority, Joseph G. Beale.

Well mouth above ocean in feet				•••
Conductor	22	to	22	=
Sandrock	50	"	72	=
Limestone, with gas and water	6	"	78	==
Fire clay	12	"	90	=

# 278 I.I. OIL WELL RECORDS. J. F. CARLL, 1877.

Soft loose shale	200	to	290	=
Blue pebble	60	"	350	=
SS., white	15	44	365	=
Pebble, dark	12	44	377	=
Soapstone	18	"	395	=
Blue rock	5	"	400	==
Red rock	8	"	408	=
Slate, dark	35	4.6	443	=
SS., white, with little salt water	75	"	518	=
State, blue	60	"	578	=
Soft blue rock	100	46	678	==
SS., gray	20	"	698	=
Soapstone	100	"	798	=
Rock, soft and changeable, with salt water	152	"	950	==
SS., white	30	"	980	
Shale	200	66	1180	=
Blue rock, hard shells	20	"	1200	=
Pebble and sandrock mixed; present gas vein,	30	"	1230	=
Blue rock, hard shells	20	"	1250	==
Depth of well			1250	=

# 1192. H. M'Clintock Well.

1875-6.

At Manchester, near Pittsburg. Authority, Dr. W. G. Hunter.

Well mouth above ocean in feet		• • • •			
Drift	70	to	70	=	
SS (Sandstone)	122	"	192	=	
Coal slate	4	46	196	=	
Slate	24	"	220	==	
\$S	160	"	380	=	
Slate, black	20	"	400	=	
SS	70	"	470	==	
Slate, black	30	"	500	=	
8S	84	46	584		
SS. and slate	16	"	600		
Shale and shells	30	"	630	=	
Slate	126	"	756	==	
SS., shell	4	"	760	==	
Slate, shell	4	"	764	=	
SS	40	"	804	=	
Slate and shells	28	46	832	=	
Mt. SS	144	"	976	==	
Slate	4	66	980		
SS	70	"	1050	==	
Slate	46	"	1096	=	
SS	14	"	1110	=	
Slate shells	18	"	1128	==	
SS	38	"	1166		

SS. and slate, black	220	to 1386	=
	134	" 1520	=

Heavy flow of salt water at about 1,400'. No oil.

# 1193. Rochester Tumbler Co.'s Well, No. 1. Commenced in 1874 and finished in 1876.

Located near the river bank at Rochester, Beaver county. Authority, Mr. Cain, manager; from memory.

Well mouth above ocean in feet		•	• • • • •	•••
Conductor, gravel	30	to	30	=
SS. (Sandstone)estimated	50	66	80	===
? (Interval unknown) estimated	200	66	280	=
Coal, slaty	2	66	282	=
?	118	66	400	=
SS	110	66	510	
?	290	**	800	==
SS	50	66	850	=
?	50	"	900	=
SS., ("Mt. SS., soft") gas and oil at 920')	40	"	940	=
?	25	"	965	=

Five and a half inch hole. Drilled wet. Cased at 830' with  $3\frac{1}{4}$ " casing.

Salt water before 300'. Heavy vein of salt water between 820' and 840'.

Slaty coal in streaks of 10" between 350' and 400.

[This well was put down by contract to the depth of 300' in 1874, and drilled deeper from time to time by the men employed about the glass works, as opportunity offered; consequently the record was very imperfectly kept originally, and even this partial account of the drilling was destroyed by fire, so that nothing remains now but the general recollection of it as given above.

The well flowed at first about 1,000 barrels of salt water per day, with a very little oil, occasionally throwing it above the top of the derrick. The water could not be exhausted by pumping, and as it flowed constantly the tubing was drawn and the stream turned into a covered tank. Here the gas collects and is conveyed by pipes to the glass works, while the water is let off at the bottom.

There was sufficient gas at first to fire 7 "glory holes" and run the annealing furnaces which had before required 140 bushels of coal and 100 bushels of coke per day.

The well is flowing now (January, 1877,) about 15 barrels of very salt water, with half a barrel of oil per day, and the volume of gas has also very perceptibly decreased.

The glass manufactured by the gas furnaces was so superior in quality to that made by coal, the expense so much less and the convenience of its use so desirable that the company were induced to put down another well to increase their gas. This well was also sunk by contract, and no reliable record has been kept, but the drilling is said to have agreed very closely with No. 1. Salt water, oil and gas were encountered the same as in No. 1 at a depth of about 920', and the drilling was continued down to 1,200' without any further increase. The character of the rocks below 930' is given as follows:

Shales, no red rock	105	to 1035	=	
Gray sandstone, about	30	" 1065	=	
Slate, with some red rock	135	" 1200	==	

Well No. 2 is flowing a large amount of salt water, bearing with it considerable oil, amounting, perhaps, to three or four-barrels per day. An effort is now being made to ream out the hole with a view of introducing large casing to shut out the water so that the gas and oil may have free vent. The supposition is that the salt water comes into the well independently of the gas and at a higher level. If this be so, no doubt the well will be greatly improved by the operation.]

# 1194. M'Laughlin & Hayes Well. September, 1876.

Two and a half miles north-west of Pleasant Unity, West-moreland county. Authority, Andrew Zuver.

Well mouth above ocean in feet				
Conductor	11	to	11	=
Limestone	3	**	14	
"Horseback"		"	19	=
Red clay and dark slate alternating	309	66	328	=
1st SS. (First Sandstone)	16	66	344	=
Slate	62	"	406	
"Black Diamond slate"	10	2.6	416	=

Shale	24	to	440	=
2d SS	75	"	515	=
7	81	**	596	==
Stray 3d SS	12	"	608	=-
SS., gray	12	44	620	=
SS., white	25	"	645	==
? nocket.	5	66	650	=-

No red below 1st SS. Unproductive.

# 1195. Burrell Oil Company's Well.

1861.

Smith's Ferry. Copied from a record made by W. H. Uncapher, "well borer."

1 ,					
Well mouth above ocean in feet		<i>.</i> .			
Conductor	4	to	4	=	
SS.(Sandstone) "glass rock," white	10	"	14	=	
Slate, black	4	46	18	=	
Gray rock	1	46	19	==	
Slate, black	2	"	21	=	
Fire clay	4	"	25	=	
Gray rock	4	"	29	=	
White rock.	21	"	50	=	
Black rock	15	"	65	=	
Slate and fire clay	5	"	70	=	
Slate, black, gas	6	66	76	=	
Slate, porous, gas and oil	7	66	83	=	
Coal	7	46	90	=	
Slate and fire clay	10	"	100	=	
Slate and limestone	10	**	110	=	
2d SS	15	"	125		
Gray rock	31	"	156	==	
SS., white	37	"	193	=	
Slate or shale, black	13	"	206	=	
SS., fine	19	"	225	_	
Slate	49	"	274	=	
Hard white rock	6	"	280	==	
SS., fine and gray.	10	"	290	=	
Slate	2	"	292	=	
Hard rock and slaty rock	8	"	300	=_	
Slate	17	44	317	=	
Hard white rock	6	64	323	=	
Gray slaty rock	26	"	349	=	
Slate	14	"	363	=	
SS., hard	2	"	365	=	
Slate	15	"	380	=	
SS	15	46	395	=	
Slate	28	"	423	=	
SS'	5	"	428	=	
Slate	2	66	430	=	

SS., gas and salt water	43	to	473	=
Hard rock	7	"	480	=
SS. fine	20	"	500	=

Unproductive; not having been drilled deep enough to reach the main oil bearing rock of this section.

# 1196. Well on Yellow Creek.

1872.

Near Moore's salt works, Saline township, Jefferson county Ohio. Authority, Jesse Johnson.

Well mouth above ocean in feet				• • •
Conductor	24	to	24	=
? (Interval unknown)	76	66	100	=
Coal	5	22	105	==
Fire clay	10	41	115	=
Slate (salt water and gas at 170')	131	**	246	<u></u>
Flint, black.	4	££	250	==
Slate	33	66	283	=
Flint, blue	4	"	287	=
Slate (salt water at 413')	132	"	419	<u>-</u>
Ist white SS	17	66	436	=
Pebble rock	64	**	500	=
Slate	8	"	508	=
SS., white, (tested here)	27	66	535	=
Slate, shells and pebbles	355	**	890	=
2d SS., (gas and oil at 930') tested here	50	"	940	==
Slate and shells	72	"	1012	=
Red Rock and shells	40	66	1052	
Red rock	48	"	1100	=
Close shell	2	"	1102	=
Red rock	3	66	1105	=

Drilled dry. Unproductive.

# 1197. Swift Farm Well.

Brounhelm township, Loraine county, Ohio. Authority, S. Minor.

Well mouth above ocean in feet				
Slate rock			450	
Soapstone	85	66	535	=
Limestone	50	"	585	=
Sandstone	22	"	607	=
Flint	15	"	622	=
Sandstone	13	"	635	==

Good show of oil in the last sandrock.

# 1198. Yankee Well. April, 1866.

Town creek, Lawrence county, Alabama. Authority, Jas. Pettigrew.

Well mouth above ocean in feet				•••
Limestone, rotten	10	to	10	=
Soapstone	14	"	24	=
Sandstone, gray and white	24	"	48	=
Sandstone streaks	24	"	72	=
Sandstone, lime and flint	48	"	120	=
Soapstone	164	"	284	=
Limestone, hard	63	"	347	==
Lime and flint	12	"	359	==
Sandstone, light gray	6	66	365	=
Lime and flint	23	"	388	=
Sandstone (crevice and smell of oil)	9	"	397	=
Limestone, hard.	59	"	456	=
Flint, hard	59	"	515	===

Wet hole 4\frac{4}{4}" in diameter. At 515' struck a sandstone, broke the jars and abandoned the well.

# CHAPTER XXIV.

# Special Record of Six Wells Near Petrolia.

The following records of six wells near Petrolia, in Butler county, were selected for special measurement during the time of drilling in the winter of 1876-77. The work was assigned to Mr. John H. Carll, special assistant, who was provided with reels and tapes for the purpose; as will be described in the forthcoming Report of Progress I.I.I., by Mr. John F. Carll, 1877.

They are arranged on pp. 284 to 296 in such a way as to make reference from one to another easy; and the names given to the key-rocks—coals, limestones, and sand-rocks—are printed in bold-face type for the same reason. For the geological discussion of the propriety of these names the reader is referred to that report.

# 1199. Sutton Well No. 4. January 5, 1877.

es south	1436 1294 1294 1270 1264 1263 1214 1180 1164	1019 1019 944 899 881 829	646	501 496 466 186 134 100
mil			II	
ut 2	256 256 256 256	449 449 687 607	790	935 940 970 990 1250 1336
gp	:9:::::::	*****	2	=======================================
ounty,	1	384483	183 to 790	5568894 5688994
Owned by H. L. Taylor & Co., and situated on the P. Sutton Farm, Fairview township, Butler county, about 24 miles south west of Petrolia.	Well mouth above ocean in feet Conductor. Slate Slate Slate and shale Slate Sl	Limestone. Slate and shells with some iron pyrites and trace of coal dark, SS. Slate and shells with some iron pyrites and trace of coal dark, SS. Slate and shele.	SSwhite and soft, 40' SS., white and soft, 49' SS., white and soft, 48'	Slate, shale and sand shells.  SS.  Sa.  Sa.  Bard and white, hard and white, slate.  Slate.  Slate.  Slate.  Slaty, bluish-gray, with a gas vein at 1,190° in a thin shell of fine bluish; Slate.  Shale.  Shale.  Shale.  Shale.  Shale, bluish, priphish, bluish, shale.

36 " 1372 == 61	, 1410 = 26 , 1432 = + 4		" 1510 7. " 1524 84	" 1530 = _ 9	20 " 1566 = - 130	40 "1606 = - 170	25 " 1631 = - 195
8	8 33 2 - 2	8 4	8 <del>I</del>	99	8	, 0 <del>1</del>	35
SS pobbly, 3' 8' SS gray, 9' 8' So slaty mixture, 12' SS gray and fine, 12' SS	Sinte and shaledark,	blue, SS SShomogeneous, fine, white, "30' rock,"	Siate SS	Same gray, "stray 3d," SS SS Stray Stray 3d," SS SS ST ST ST SS SS ST ST ST ST ST ST		Slate	SS fine, white, { (not through)" Fourth Sand"

Drilled dry. Cased at 643'. A very little salt water below the casing,
Gas at 1,190', half sufficient to fire the boiler with while drilling, but this gas was exhausted in three or four days. About the
same amount of gas was found in the "2d sand."
Yery little oil in the "3d sand." The hole filled up 300' or 400' with oil from the top of the "4th sand," and flowed when
drilled a few feet deeper. No Red Rook found in drilling. Best daily production, 40 barrels.

# 1200. Dougherty Well, No. 2. December 7, 1876.

380																				
1 mile	1327	1312	1257	1172	1121	1108	1087	1067	1967	987	887	868 888	772	745	652	635	527 402	387	787	149
county, about	0 to 10 ==	5 4 15	02   19   19   19	35 " 155 ==	3 .: 200 3 .: 209 3 .: 209	:	240	: :	1 008	:	440	 464 754	: :		93 " 675 ==	3	125 " 800	076	11961	: :
tler	: 7	•		ω.		_	• •	-46	4 00		400	.4	u,		٠.	Τ,	32	· ;	¥ °	0 43
Owned by Dougherty and Devlin, and situated on the M'Cleary farm, Fairview township, Butler county, about 1 mile so $80^\circ$ west of Petrolia, and 14 miles north $60^\circ$ east from Sutton Well, No. 4.	Well mouth above ocean in feet,	SS. State St	Limestone. Limestone thickness unknown.	State	Goal Slaty.	Sand shellshard and blue,	Zilite Timosfens	SIR.6.	SS. gritty, white, 'sixty-foot rook,'	Slate very dark,	Sandy, dark gray,	Slate	SS. soft and gray on top, hard and white on bottom.	Slatedark, with gray sand shells,	SS \ bottom, soft and gray, \ \	Slate of ways and delay bluish,	Slate	Sand shells.	State Otturshi Shata	Slate Dulish

ty-foot rock," 87 "1265 = 62	.84 EL	, 21 10 12	27 " 1412 = — 85	ay at bottom, 16 " 1430 = - 93
Second Sand" and "fifty-foot rock,"	Sand shells and slate	Slate SS. Slate	SS., fine, white	Slate pebbly and white on top, fine and yellowish-gray at bottom,
SS hard and bluish gray, 12' SS olive and gray, 20' SS single stay, 45' SS fine gray, 10' Pod stay, 10	Sand shells and slate SS Red rook	Slate SS Slate	SS., fine, white	SlateSS. (about through)

Drilled dry. Cased the first time at 478'. Flood of salt water at 570'. Casing pulled and put in the second time to a depth of 610', and found no water below this depth. A small amount of gas in the "2d sand." Oil in the "3d sand," at 1,423'. Average daily production, 15 barrels.

# 1201. Evans Well, No. 21.

# December 23, 1876.

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ns o	1393 1375 1213 1213 1104 1104 1105 1005 1017 1017 1017 1017 1017 1017	9	004480HH
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four	188 180 180 180 180 225 289 289 289 288 386 458 452 496 546 551 588 588 588 588	745	765 845 895 930 1000 1120 1274
rat:	Q:::::::::::::::::::::::::::::::::::::	:	=======
abc To. 2	182 1 4 4 3 4 5 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	148	20 80 50 100 100 74
Owned by Evans & Co., and situated on the Dougherty farm, Fairview township, Butler county, about four-fifths of a 1 south 40° west of Petrolia and about three-fourths of a mile south 40° east of the Dougherty Well, No. 2.	Well mouth above ocean in feet.  Conductor.  Safe and shale, with bluish-gray shells.  Limestone.  SS.  Shelly shale.  Coal.  Coal.  SS.  SS.  SS.  SS.  Coal.  SIate and shells.  Coal.  Siate.  SS.  Siate and shells.  Coal.  Siate.  Siate	SS. gray occasional partings of dark slate "Mountain Sand"	Slate fawn-color and bluish, Sand shells.  Sand shells.  SS.  SS.  SIST.  Slate fawn-color and bluish, SS.  Barto flaggy, olive-gray, White, Slate sendy, dark, Slate sendy, dark, Slate more shelly, dark gray, Slate muddy, dark, Slate muddy, dark, Slate

SS., fine, olive-gfay Slate dark. Ss. fine, with slate partings.  L. Slate Slate dark. SS. fine, with slate partings.  L. Slate SS.  Hard, olive-gray, "fifty-foot rook," SS.  Cark, with gray sand shells, on SS.  As Slate Slate Slate Slate Slate As Slate	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
SS, white	25 " $1506 = -113$
Skate dark,	7 " 1513 = - 120
SS., pebbly, coarse, gray	15 " $1528 = -135$
Slate, shelly, purplish trace of red rock at 1,565',	58 " 1586 = -193
SS., pebbly, coarse, white	22 " $1608 = -215$
Slate very dark,	8 " 1616 = - 223
Drilled dry. Cased at 705', and found no water below easing. A little gas at 1,120'. Oil at 1,519', and no increase of oil in the "4th sand." Torpedoed, but no apparent increase of oil. Pumped about 1, barrels of oil per day. Torpedoed a second time, and after that said to be averaging 10 barrels per day.	519', and no increase of oil in or day. Torpedoed a second

# 1202. Haxelwood Well No. 21.

# December 7, 1876,

pont Owned by the Hazerwood Oil Comp.

a g																		
county,		1298	1172	1142	1097	1053 1033	1003	1001	935	888 648	814	628	528	491 463	363 973	288	143	tö
lor (		: 11	11	11 11	1	11 11	11	11 11	11	11	1	1 11	.l	11 11	11		111	1}
But	۵	16	126	328	201	245 265 265	295	327	363	415	484	0.49 ,,	770	835 25	985	1035	1155	<u> </u>
h <b>ìp,</b>		2	: :	: :	= :	: :	: :	: =	<b>:</b> :	: :	=	*	=	: :	= =	: :	: 3:	=
wns]		16	110	S 4	<del>ا</del> - ا	200	စ္ထင္	3 8	36	34	65	186	100	28 23	25	302	329	27.
Owned by the Hazelwood Oil Company, and situated on the H. P. Shakely Farm, Fairview township, Butler county, ab one-half mile south 350 east of Petrolia, and four-fifths of a mile north 750 east of Evans Well No. 21.	17.71	:.		rey, rev.		Limestone	obal. dark,	SS	outer SS	Slate Brey and Drownins greek.	Slate.	70) 80' 80' <b>Mountain Sand</b> ??	dark,	SS., fine and hard		n . n .		
-	•	_ ,		-	- 44	- U		44 U	4			ar ar 67 67	W (C	ניט ניט	للاسالما	ULU2	OUT OF	<b>d</b>

6 " 1213 ==	4	, 63	87 ' 1312 ==			20 " 1356 = - 58	3 " $1359 = -61$	23 " 1382 = 84		1 "1412 = -114	" $1431 = -1$	" 1450 = -	" 1458 ==	$24 \cdot 1482 = -184$	1	$\frac{3}{2}$ " $\frac{1512}{1512} = -214$
SS	Red rook sandy chocolate color,	SS., olive grey, hakey	Slatesandy, dark,	SS fine, dark gray, "Blue Monday,"	Red rook soft, "Big Red Rock,"	Slatedark,	ssgray, "Boulder,"	Slate.	SS, with yellow pebblesStray Third".	Slate. dark,	SS., coarse and grey	Slatedark,	Ked rook.	Slate, purplish,	SS., yellowish-gray	Slate very dark,

Drilled dry. Cased at 486. A little salt water in the "Mountain sand," below the casing, about half enough to drill with. Very little gas in the "2d sand." Oil in the "3d sand" at 1,415, and no increase in the "4th." Torpedoed before being tubed with no apparent increase of oil. Average daily production, 15 barrels.

1203. Morehead and Lardin Well, No. 2.

# January 6, 1877.

four-fifths	20 115 110	986 920 74	54 85	948 928 900 869	069	009	454	379 369 269 234 140	
out									
unty, ak	110	2885 2886 3886 3886 3886 3886 3886 3886 3886		472 = 492 = 520 = 551 = 5	179 " 730 ==	= 092 ,,	= 906 " 908 ==	" 1041 = " 1051 = " 1151 = " 1156 = " 1280 = "	
60	ದ್ ದ	មេខ	9 4 8 1	3888	٠ 0	30	9	75 100 100 35 94	
utle	37	H					8	10100	
Owned by Morehead, Lardin & Co., and situated on the Mortimer farm, Fairview township, Butler county, about four-fifths of a mile north 55° east of Hazelwood Well, No. 21.  Well mouth above occan in fact	Conductor Slate, muddy, trace of Limestone and Coal reported at about 70, 105 " 110 =	Shelly gray sand and very black slate  Limestone.  Shelly gray sand and very black slate  Forriforous Limestone  Interstratified,	Slate.  SS. muddy, bluish-gray, Slate, with blue sand shells. gray, "sixty-foot rock,"	SS. white, with trace of coal, Slate. gray, with slate partings, SS. hard, gray, with flms of coal, 20 ; black, with gray sand shells, SS.	90. Hne, grayish-white, 90' ("Mountain Sand"		S fine, muddy, gray, 76' \( \)	Shells Slate Slate Slate Slate Slate Gark, Slate Slate Slate Slate Gark, Slate Slate Slate Slate Slate Slate Slate	
Owned by Morehead, Lardin & Co., and situated on the Mortimer farm, Fairview to of a mile east of Petrolia, and three-fourths of a mile north 55° east of Hazelwood Well Well mouth above occern in fact	Conductor Slate, muddy, trace of Slate, muddy, trace of Limestone and Coal	Shelly gray sand and very black slate Limestone. Slate Slate Slate	Slate. SSS. muddy, blu Slate, with blue sand shells. gray, "sixty.fo	SS. white, with trace Slate. Slate. gray, with films of coal, 20° ; black, with gray san	SS "Mountain Sand"	٠	SS fine, muddy, gray, 76' ( Slate good	Shells Slate Slate Slate Slate	

38 " 1318 ==	1 8	ço	slaty, olive and red, "thirty-foot rock," 15 "1398 = 22		. ,	"Big Red," 24 " 1466 = 46	dark, 27 " 1493 73	4	dark, 3 "1500 = - 80	om coarse and white, 18 " 1518 = - 98	dark, 10 "1528 = - 108		21 " $1549 = -129$
SS., with slate partings, muddy, olive-gray, "Second Sand"	Next TOOM	State	SS slaty, onve and rec	Slate.	SS. fine, and ashy gray, "Blue Monday,"	Red slate	Slate	SS. shelly, "boulder,"	Slatedark,	SS., top greenish, middle yellowish "Stray Third" bottom coarse and white,	Slate. dark,	SS., (1) large white pebbles, (2) very fine gray sand, (3) very fine white sand, (4) very fine gray	sand, "3d sand," (not through) "Third Sand"

Drilled dry. Cased at 526' and no water found below the casing. A little gas in the "2d sand." Oil in the "3d sand" at 1,530; flowed at 1,545'. Average daily production, 12 barrels.

# 294 I.I.

# 1204. Kern Well, No. 6.

November 27, 1876.

south

<u>α</u>			
míles	1464 1454 1262 1262 1169 1119 1081 1044 964	797	767 655 684 672 8324 314 204 127
7, about 14	282 292 10 282 293 293 293 293 293 293 293 293 293 29	= 199 "	" 697 " 880
ounts	101 102 103 103 103 103 103 103 103 103 103 103	81	30 112 71 112 148 10 110
Owned by H. L. Taylor & Co., and situated on the W. Snow farm, Fairview township, Butler county, about 14 miles so \$50 east of Petrolia, and ½ miles south 800 east of the Morehead & Lardin Well, No. 2.	Well mouth above ocean in feet  Conductor Slate and sand with some Limestone Slate Slate Shale Shale Shale Limestone Shale Shale Shale Limestone Shale	SS. Softon muddy, S. Mountain Sand	Slate

						- ;
6 (1342 = 122 6 (1348 = 116 17 (1265 = 00	53 (* 1418 == 46 14 (* 1432 == 32	8 " 1440 = + 24 40 " 1480 = - 16 15 " 1495 = - 31		23 ** 1540 == 76 5 ** 1545 == 76 5 ** 1545 == 81 15 ** 1560 == 96	6 " 1565 — 101 4 " 1565 — 101 98 " 1507 — 133	111 .
SS.,grayish-whiteSecond SandSlate	Red rock. Dig heu kock. Soft, Slate and shale.	SS. Red rook. Slate.	Sandy shale. Red rook . Sandy shale	Red rock. Shale Red rock.	Shaleshalonvegtay, SS. SS. Slategraphy, black, "boulder," SIate.	SS, top pebbly, white, bottom fine sand, <b>Third Sand</b> . Slafe.

Drilled dry. Cased at 617', and no water found below the casing. A little gas at 1138', and show of oil. Oil in the "3d sand" at 1,670'. Average daily production, 12 barrels.

# CHAPTER XXV.

OIL WELL ELEVATIONS IN CLARION, ARMSTRONG AND BUTLER:
COUNTIES.

The following elevations of well mouths in the counties of Clarion, Armstrong and Butler, have been compiled by Mr. H. M. Chance, partly from his own field notes of 1876 and partly from Mr. F. A. Hatch's notes of 1875. These levels were all provisionally recorded at the time they were taken, some being based on the Parker and Karns City RR. datum, some on Mr. D. Jones Lucas' Union Pipe Co. datum and others on the Brady's Bend datum. They had not been adjusted totrue ocean level, nor could they be so adjusted, on account of the uncertainty surrounding the levels of the Allegheny Valley RR., on which they were dependent for a connection with. tide water. This difficulty was only removed in March last by our re-leveling of a part of the Valley road, and then it was. ascertained that all our provisional elevations were too high. They varied, also, from 6' to 22', according to the datum planes used. It would not be surprising, therefore, if some slight clerical errors have been made in preparing this table for publication, for the levels were all based on these disagreeing datum planes, and have been selected from field notes made at wide intervals and by different parties.

Our plan has been, in leveling through a closely drilled district, to keep the direct line of levels with a great deal of care, while the numerous side wells are taken more rapidly and with less caution, and the notes used in such a manner as not to affect the integrity of the main line in case an error of a few inches should be made on any particular side well. The variation of a foot, or even more, in the actual levels between two-wells is practically of no account in a study of their records,

for be the levels to the well mouths ever so precise we are still dependent on the drillers' measurement of the bore hole, where an error is quite likely to occur, for the most important elements in our calculations.

But while the plan adopted secured good results along the main line, which was found to run through with very gratifying accuracy from Parkers to Great Belt City, it is still open to an opportunity for slight disagreements, which, although really of no importance, may make some of the levels appear to lack that strict consistency and relative agreement which are regarded as the proofs of accurate instrumental work. Transverse lines must necessarily be run, and these may be for convenience, or thoughtlessly, based by one party on some one of the secondary wells of another party, and the possibility of error may be augmented, perhaps, by taking the casing head as the level point where the derrick floor was previously used, or vice versa. Thus disagreements appear which are not due to instrumental inaccuracies, but to a misunderstanding of hasty or meagre notes.

Another difficulty encountered by every engineer who has undertaken this kind of work, is to obtain the names of the wells and their locations so that they can at all times thereafter be identified by himself and others. He may learn that this is Smith well No. 1, farm unknown. It is perhaps the only well in the vicinity at the time, and the name seems definite enough. But a few months later some one attempts to connect his levels with Smith No. 1, and he finds that Mr. Smith has a lease on the Jenkins farm and another adjoining on the Jones farm.

There is now a Smith No. 1 on each lease, and which is the well referred to no one can tell to a certainty, but the probabilities are he will be directed to the wrong one, and a disagreement of levels is the result. Then, too, the pumpers frequently have one name for a well while the owners have another, and the name is changed as often as the ownership of the well changes.

But notwithstanding the drawbacks mentioned, the publication of these well elevations cannot but be of great service to a large class of oil operators. They give a general idea of the topography of the country, and afford the means of approximate comparisons of levels both of surface and oil sands to those who are acquainted with the localities and the histories of the wells, which could not be obtained in any other way.

GROUP 1.

# Wells in the Vicinity of Parker.

	Name.	Localit <b>y</b> .	Township.	Elevation ab.
1205 1206 1207 1208 1209 1210 1211 1212 1213 1214 1215 1216 1217 1218 1219 1220 1221 1222 1223 1224 1225 1223 1224 1225 1223 1224 1225 1228 1228 1228 1228 1228 1228 1228	Armstead Sulphur Water Well. Lioness. Divide or "Vide" Forker, No. 1. Critchlow Marion Dull. Clifford Game. Darling. Well. Do Do Do Do Columbia, No. 3do No. 2 Hoopskirt, No. 1do No. 4 Tycoon. Booth. Exchange	Parker City. Lawrenceburg. Farrentowndodododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododo	strong codododododododo	
1234	South Side	dodol.	o5	1319
1235	Well	Black Farm	ob	1223
1236 1237	Do	dodo	do	1182
1238	Do	dodo	do	1184
	10,	uouo,	ao	1171

# GROUP 2.

# Wells at Stonehouse.

	Name.	Locality.	Township.	Elevation ab.
1239 1240 1241 1242	doNo. 2 Butler, No. 1	Stonehouse Tractdododododododo.	ler codo	1015 1007 1005 1149

# GROUP 3.

# Wells Near Martinsburg, Campbell and Argyle.

	Name.	Locality.	Township.	Elevation ab.
1243 1244 1245 1246 1247 1248 1251 1252 1253 1255 1256 1257 1258 1256 1257 1260 1261 1262 1263 1264 1264 1265 1266 1267 1266 1267 1268	Cornwall, No. 1 Jacobs Billy Patterson Jenkins Rattling Jack Brawley, No. 1 Arrowsmith Bennett, No. 1 Wildcat, No. 1 Harrington, No. 1 Rebecca Jane Ingleside Rosebud Harrop & Co., No. 1 Emery&Caldwell, No. 1 dodoNo.4 Robt. Campbell Argyle Satterfield & Taylor Bly & Rowley, No. 2 Good Enough, No. 1 dodo. No. 2 A L. Campbell No. 3	dodo Near Martinsburg Sedgwick Farm Fronsinger Farm Say (?) Farmdodo Fletcher Farmdodo Gibson Farm  Harrop Farm R. D. Campbell Farmdodododododododododo	ler códododododododo	1871 1407 1819 1156 1882 1183 1127 1129 1138 1135 1148 1146 1151 1160 1167 1162 1171 1164 1171
1270	Lady Campbell	dodo	do	1166

# GROUP 4.

# Wells Near Petrolia and Karns City.

	Name.	Locality.	Township.	Elevation ab.	
1271 1272 1273 1274 1275 1276 1277 1278 1281 1282 1283 1284 1286 1286 1286 1288 1289 1291 1292 1293 1294 1295 1297	Lightfoot S. N. Delap, No. 1 Nesbit & Lardin, No. 1 do do No. 3 do do No. 5 Hazlewood Co. No. 5 Hazlewood Co. No do do No Balph Spence Hazelwood, No. 8 do No. 13 do No. 21 do No. 2 Smith & Thompson Perdue, No. 1 do No. 2 Preston Water Well Christian & Cameron M' Donald Frothingham, No. 1 Banks, No. 1 do No. 2 Mattison & M' Donald,	Petroliadododododododo	Butler codododododododododododododododododododododododododododododododododododo	1171 1175 1177 1179 1188 1198 1176 1190 1206 1189 1226 1298 1202 1214 1185 1184 1206 1192 1191 1196 1210 1187 1198	
$1298 \\ 1299$	Rob Roy	dododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododo .	do	$\frac{1221}{1297}$	
1300	Nesbit & Lardin, No.2	Jamieson Farm.	do	1185	
1301	Templeton	dodo	do	1222	
1302	Banks & Gaily	W. Scott Farm	do	1221	
1303	Tack & Morehead, No.1	M'Alear (?) Farm	do	1233	
1304	dodoNo.2	dodo	do	1229	

# GROUP 5.

# Wells Near Petrolia and Fairview.

	Name.	Locality.	Township.	Elevation ab.
1305 1306	Jennings, No. 5	Dougherty Farmdodo	Fairview,	$\frac{1217}{1222}$
1307	Newton.	dodo	do	1231
1308	Evans, No. 21	dodo	do	1393
1309	Hornet	M'Cleary Farm	do	1284
1310	Spider	dodo	do	1264
1311	Dougherty, No. 2	ldodo	1do	1327
1312	Mitchell, No. 2	dodo	do	1317
1313		dodo		1322
1314		dodo		1399
1315	Sutton, No. 4	P. Sutton Farm		1436
1316	Mary Ann	W. Wilson Farm	do	1288
1317	Lauretta, No. 1	dodo	do	$1254 \\ 1334$
$\frac{1318}{1319}$	Dauretta, No. 2	dodo	do	1269
1320	Shanghai	dodo	0.5	1306
1321	Anderson.	dodo	do	1360
1322		Mayville Tract		1374
1323	Mayville, No. 4?	dodo	do	1331
1324	Patton, No.2	Patton Farm	dol	1369

## GROUP 6.

# Wells Near Modoc and Greece City.

	Name.	Locality.	j Township.	Elevation ab.
1325 1326 1327 1328 1329 1330 1331 1332 1333 1334 1335 1336 1337	dodo2 Dougherty, No. — dodo— Maggie Frank Hare. Osceola Maud Jack Brawley & Overy	D. C. Rankin Farm dododododododododododododododododododododododododododododododododododododo	Butler co	1248 1219 1220 1239 1227

# 302 I.I. OIL WELL RECORDS. J. F. CARLL, 1877.

# WELLS NEAR MODOC AND GREECE CITY-Continued.

	Name.	Locality.	Township.	Elevation ab.
1338 1339 1340 1341 1342 1343 1344 1346 1347 1350 1351 1352 1353 1354 1355 1356 1357 1358 1359 1361 1362 1361 1362 1363 1364 1365 1365 1366 1367	Deād Beat Mohawk Forest City Smith Hooker Jim Sutton Darrar Lady Sutton Columbia Oil Co. No.: do do No. Gordon, No. 19 Miller Oil Co. No. 1. Lady M'Clelland Glade Hoover M'Clelland, No. 1 Preston Maggie, No. 1 Denny Gordon Collins' Bros Roberts Woods & Ripley, No. 1 Dig Medicine Olive Sadie Mary Ann Constable, No. 1 Constable, No. 1	S. Troutman Farm  do do do  do do do  do do do  J. Sutton Farm  do do do  do do do  do do do  do do do  S. M'Clelland Farm  do do do  do do do  do do do  De Barnhart Farm  G. R. Campbell Farm  do do do  do do do  D. Barnhart Farm  do do do  M. Brown Farm  G. R. Campbell Farm  do do do  J. C. Brown(heirs)Farm,  Jamieson Farm  do do   Butler codododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododo	1281 1277 1273 1272 1249 1249 1261 1286 1281 1288 1281 1254 1269 1253 1220 1170 1161 1142 1147 1137 1137 1123 1122 1117	
1368 1369	Morrison, No. 1	dodo Morrison Farm	do.	1142 1110
1370	doNo. —	dodo.	do	1113
1371	Karns	dodo	do	1111
1372	Red Cross	dodo	ao	1105
1373	Invincible	dodo	ao	1110
1374	Freston, NO I	Huselton Farm	qo	1102
1375	usemon	nuseiton Farm	ao	1134.

#### GROUP 7.

## Wells East of Petrolia.

	Name. *	Locality.	Township.	Elevation ab.
1376	School House No. 1	W. W. M'Dermott Farm,	Fairview	1217
1377	M'Garrey No 1	M'Garvey Farm	Butler co	1273
1378	do No -	dodo	do.	1225
1379	Forman No. 8?	dodo	ob	1354
1380	Boyle, No. 1.	dododo	do	1354
1381	doNo. 2	dodo	do	1294
1382	doNo. 3	ldodo	ob	1330
1383	doNo. 4	dodo	do	1350
1384	Moreh'd&Lardin, No.2	Mortimer Farm	do	1420
1385	Kerns, No. 6	Snow Farm	do	1464
1386	H. L. T. & Co., No	Carner Farm	do	1347
1387	doNo. 3,	dodo	do	1404
1388	—— Well	dodo	do	1366
1389	Lone Star, No. 1	dodo	do	1362
1390	Jennings, No. 5	Steele Farm	do	1466
1391	ldoNo. 4	dodo	do	1462
1392	Boss	J. Parker Farm	Perry, Arm-	
1393	Cummings, No. 1	Adam Peters Farm	strong co.	1230
1394	Hunter & Cummings,	Crawford Farm	do	1384
1395	do, No. 10, [No 9	Crawford Farmdodo	do	1320
1396	doNo. 11	dodo	ldo	1392
1397	B. B. I. Co., No. 4	B. Bend Tract	Brady's B.,	850
1398	doNo. 5	dodo	Armst'g co.	852
1399	ldoNo. 12	dodo	ldo	972

#### GROUP 8.

# Wells Near Karns City and Millerstown.

	Name.	Locality.	Township.	Elovation ab.
1400 1401 1402	doNo. 2, [1	L. Riddle Farmdododododododo	Butler co.	1249 1244 1236
1403 1404 1405 1406	Say, No. 1	dodo Kinkaid Farmdododododododo	do	1238 1240 1244 1299
1407 1408	Kinkaid	dodo	do	1281

# 304 I.I. OIL WELL RECORDS. J. F. CARLL, 1877.

#### WELLS NEAR KARNS CITY AND MILLERSTOWN-Continued.

	Name.	Locality.	Township.	Elevation ab.
7.400	Duanting No.	A Fond 2 Forms	Wa i www i aww	1077
1409	Prentice, No	A. Ford f Farm	Pairview,	1371
1410	doNo. —		Butler co.	1371
1411	Saulsbury	J. B. Campoell Farm	ao	1292
1412	Bott Bros., No	J. P. Campbell Farm	αο	1374
1413	Angel, No. 6	J. Moore Farm	ao	1297
1414		dodo	ao	1399
1415	Lady Moore		do	1276
1416	M'vey & Co., No. 1	dodo	ao	1364
1417	Reystone	B. B. Seibert Farm	do	1393
$\frac{1418}{1419}$	Goibant	Soibort Farms	ao	1318
1420	Thele Wisen	Seibert Farm	do	1385
1421	Shook I are No. 2	Shapklar 2 Farm	αο	1387 1388
1422	do No	do do	Donegal,	
1423	Wyatt No	D Barnhart Farm	Fairmion	1183
1424	Gordon Bros	Sheakley? Farmdododododododo	Butler co	1270
1425	Wyatt. No. —	dodo	Truer co.	1276
1426	Marcus Brownson	dodo	do	1303
1427	Bennett	dodo	do	1277
1428	Old Bover	dodo	οħ	1259
1429	D. Barnhardt, No. 2	dodo	do	1201
1430	Scuader	Keppie Farm	do	1332
1431	M'Gill	Daubenspeck Farm	dol	1310
1432	M'Michael	P. M'Dermott Farm	do	1342
1433	Cherry Tree	Hemphill FarmBarnhart? Farmdodo	Donegal,	1322
1434 1435	J. Barnhart	Barnnart ? Farm	Butler co.	1169
1436	F. Barnhart Preston	T Flomphill Form	do	1194
1437	Tittle Too	J. Hemphill Farmdodo	do	1168 116 <del>4</del>
1438	Shreve No. ?	A. Stewart Farm	0	1195
1439	do. No.1.	05 05	0.5	1210
1440	Blue Factory	Sheakley (heirs) Farm	do	1172
1441	M'Kinney, No. 2	Sheakley (heirs) Farm Hemphill (heirs) Farm ?, dodo	do	1163
1442	doNo. 4	dododo	do	1179
1443	[uo	uo ,	ao	1191
1444				1176
1445	Captain Jack	dodo	do	1189
1446	Shite Poke, No. 1	dodo	do	1172
1447	warner	warner Farm	OD	1202
1448	M'Clintock	Millerstown	do	1156
1449 1450	Proven & Prov	do	do	1156
1451	Brown & Miss	do	do	1164
$1451 \\ 1452$	Thompson & Machlin	do Fetzer & Myers Tract	αο	1160
1453	Mechlin, No. 1.	dodo	ου	1162
1454	M'Kinney Bros.	dodo	do	1170 1171
1455	Ida	dodo	do	1203
1456	Tom Collins	dodo	40	1216
1457	Galey	dodo	do	1229

## GROUP 9.

## Wells Between Millerstown and St. Joe.

	Name.	Locality.	Township.	Elevation ab.
1458	M'Kinney, No	Hemphill (heirs) Farm	Donegal,	1225
1459	doNo. 12.	dodo	Butler co.	1277
1460	do No 13	dodo	do.	1304
1461	do No 17	0.5	40	1366
1462	do No. 19	obob	ob	1387
1463	Angel Gas Well	dodo. Dugan Farm	ob	1295
1464	Diviner, No. 1	Diviner Farm	do	1262
1465	doNo. 2	dodo	do	1279
1466	doNo. 3 ?	dodo	do	1379
3467	doNo. 3 ?	dodo	do	1302
1468	doNo. 4	dodo	do	1332
1469	doNo. 5	dodo	do	1375
1470	doNo. 6	dodo	do	1385
1471	doNo. 7	dodo	do	1374
1472	Grace, S. & T	Fetzer & Myers Tract	do	1381
1473	doF. & M	dodo	do	1402
1474	Weiser	M'Ginley Farm	do	1350
1475	Caldwell & Emery	dodo	do	1357
1476	Shamburg & O'Hara	dodo	do	1397
1477	Prentice, No. 1	dodo	do	1411
1478	doNo. 2	dodo	do	1374
1479	doNo. 3	dodo	do	1404
1480	Adams & Friday	dodo	ao	1379
1481	M'Ginley, No. 3	dodo	do	1393
1482 1483	Black Maria	dodo	do	1353
1484	Hart & Conkla	dodo	do	1330 1348
1485	Relief No 1	dodo	do	1409
1486	do No. 2	dodo	do	1368
1487	Hunter, No. 1	dodo	oh	1294
1488	doNo. 2	do do	do	1295
1489	Scudder	??	do	1264
1490	Smith	Dugan (?) Farm	do	1382
1491	Overv. No. 12.	Dugan (?) Farm E. Duffy Farm	do	1369
1492	O'Reilly	do do. M'Allister Farm	do	1339
1493	M'Allister, No. 1	M'Allister Farm	do	1318
1494	doNo. 3	dodo	do	1389
1495	doNo. 5	dodo	do	1353
1496	Overy, No. 2	M'Laughlin Farm	[do	1361
1497	doNo.6	dodo	do	1385
1498		dodo	do	1355
1499	doNo. —	Murphy Farm	ao	1292
1500	Gillespie	Gillespie Farm	ao	1329 1321
1501		dodo	do	1289
1502	Prentice	C. Duffy Farm	do	1359
$1503 \\ 1504$	Lechner		30	1316
1504	Tanner	dodo		1363
1506	Showalter	dodo	do	1361
1507	Bronson&Harrington,	Boyd Farm	ob.	1367
1508	doNo.—	dodo	do	1389

# 306 I.I. OIL WELL RECORDS. J. F. CARLL, 1877.

#### WELLS BETWEEN MILLERSTOWN AND ST. JOE-Continued.

	Name.	Locality.	Township.	Elevation ab.
1509 1510 1511 1512 1513 1514 1515 1516 1517 1518 1519	doNo. 1 Bulger Shidemantle Maid, No. — doNo. —	J. Now Farm	Butler co. do do do do do do do do	1400- 1371 1385 1390- 1294 1368- 1399- 1316 1366 1388- 1388- 1346
1520 1521 1522	Armor	dodo Graham (?) Farm dodo	do	1400 1379 1346

#### GROUP 10.

# Wells Near St. Joe and Carbon Centre.

	Name.	Locality.	Township.	filevation ab.
1523 1524 1525 1526 1527 1528 1529	Prentice No. 3	O'Donnell Farm. P. Duffy Farm. do do do do do do do do Robt. Thompson Farm.	Butler có. do do	1398- 1212 1216 1298 1309 1222 1162

#### GROUP 11.

# Wells at Jeffersonville and Herman Station.

	Name.	Locality.	Township.	Elevation ab.
1530 1531 1532 1533 1524 1535	doNo. 2 Summit, (No. 1) Herman Oil Co., No. 2 Hunter	Humes Farm do do Eichenlaub Farm do do Schnure Farm Bingham Farm	Butler co. Summit, Butler codo	1124 1161 1326 1281 1191 1263

## GROUP 12.

# Wells Between Foxburg, St. Petersburg and Turkey City.

	Name.	Locality.	Township.	Elevation ab.
1536	Frazer		Richland,	1153
1537	Gas Well		Clarion co.	1138
1538		Rupert Farm	do	1175
1539	Ashbaugh	Near St. Petersburg	do	1334
1540	Chambers	dodo	do	1333
1541	Edinger, No. —	N. E. of St. Petersburg	do	1324
1542	doNo. —	dododo	do	1280
1543	Ashbaugh	dodo	do	1261
1544	Lone Walking Beam,	dododo	do	1238
1545	Hulings	dodo	do	1191
1546	Holliday & Ritts	Rits Farm	do	1235
1547	Average of cluster of		1	
	wells		do	1240
1548	Race Bros		do	1271
1549	Pioneer, No. 1	Neely Farm	do	1213
1550	Victor Ritter	Near Richland Furnace	do	1223
1551		dodo		1213
1552		dodo		1192
1553	Harley and Burzer	dodo	do	1120
<b>1554</b>	Wise	Caden Farm	do	1090
1555	M'Laughlin	Turkey Run	do	1100

#### GROUP 13.

# Wells Near Turkey City and Dogtown.

,	Name.	Locality.	Township	Elevation ab.
1556	Lone Pine, No. 1	Near Turkey City	Richland	1131
1557		.dodo		1130
1558	Thisth	. do do		1144
1559	Sandara	.dodo.	do	1154
1560	Smith	.dodo	do	1167
1561	Alex Panton	.dodo.	do	1162
1562		Weller Farm.		1177
1563	Neal	Near Turkey City	do	1186
1564	Brady	.dodo	do	1177
1565	Weller, No. 1.	dodo	do	1268
1566	Legal Tender	dodo	.do	1232
1567	Shammut.		do	1319
1568	Mingo Chief	Masters Farm.	Beaver, Cla-	1339
1569	Baldy	dodo	rion co.	1334
1570	Forest City. No. 1		do	1361
1571	Dutch	Masters Farm	do	1410
1572	Masters (?)	dodo	dol	1418
1573	Hermage	dodo	dol	1450
1574	Rav & Miller, No. I	Near Dogtown.	d. (	1459
1575	Harold.	do do	do I	1483
1576	Last Chance	do do	do 1	1474
1577	Contest	dodo	do	1468
1578	Stewart, No. 1	dodo	do	1498
1579	M'Nuity	dodo	do l	1502
1580	Hardison	dodo	do	1511

## GROUP 14.

# Wells Between Dogtown, Pickwick and Triangle.

	Name.	Locality.	Township.	Elevation ab.
15°1 1582 1583 1584 1585 1586 1587 1588	Well Gilbert, No. 2 (?) Martin & Myers Harvick Smth Cook, No. 3 Hummel	Hummel Tractdododododododo	Clarion 6, do	1487 1473 1407 170 1417 1381 1399

WELLS BETWEEN DOGTOWN, PICKWICK AND TRIANGLE-Continued.

	Name.	Locality.	Township.	Elevation ab.
1589 1590 1591 1592 1593 1594 1595 1596 1597 1598 1599 1600	Andrew Reid Harley Bros. Triangle City Fertig Rush & Green Harley Bros Keily Bros Allhouse & Cuner Wetter Hard Scrabble Thompson	Near Pickwickdodododo Cropp Farmdodododododo Delo Farm N. W. of Pickwickdodododododododo	Clarion cododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododododo	1416 1407 1390 1376 1379 1389 1403 1366 1373 1315 1368
1601 1602		Wid. Kribbs Farm N. W. of Pickwick		1404 1326

#### GROUP 15.

# Wells Near Pickwick and Edenburg.

	Name.	Locality.	Township.	Elevation ab.
1603 1604 1605 1606 1607 1608 1609 1611 1612 1613 1614 1615 1616 1617 1618	Horn Well  Wynkoop & Co  Well  Moran, No. —  Coss Bro., No. 1  Swetzer, No. 2  Chambers, No. —  do No. —	Sam. Beals Farm Beals (?) Farm T. H. Axley Farm S. W. of Edenburg do do do Haney Farm Bowers Farm In Woods Mendenhall Farm do do J. Best Farm Edenburg N. Knoll Farm do do	Clarion co,	1464 1433 1430 1459 1441 1492 1443 1402 1445 1408 1336 1336 1336 1550 1550
$1621 \\ 1622$	Grav	North of Edenburgdodo	do	1367
1623	M'Guire & Co.	dodo	do	1355
1624	Antwern Pine Co	do do	Ιαο	1354
1625	1 St. Lawrence	1dodo	L	1396 1396
1626	LIGHTONE	1	I	1000
1627	Balliot & Lee, No. 2	do do	ιαο	1919

# 310 I.I. OIL WELL RECORDS. J. F. CARLL, 1877.

## WELLS NEAR PICKWICK AND EDENBURG-Continued.

	Name.	Locality.	Township.	Elevation ab.
1628 1629 1630 1631 1632 1633 1634 1635 1636 1637 1638	doNo Painter & Warner Bradley, No doNo Hulings, NodoNo Grant & Aikins. Black Hope Gray Bros Berlin Gas Well.	Near Edenburg. do. Near Shippenville. do. do. do. North of Shippenville. do. do. do.	do do do do Elk, Clarion co, do	1347 1342 1290 1349 1296 1353 1825 1406 1380 1324 1410 1423 1404

#### GROUP 16.

# Wells at Bullion Run, Venango County.

	Name.	Locality.	Township.	Elevation ab.
1641 1642 1643 1644 1645 1646 1647 1648	Simcox, No. 3 Galey, No. 4 Dean, T. & S., No. 1	dodo Simcox Farm. Galey Farm Taylor Farm. dodo	Venango co, do do do do do	1057 1127 1122 1222 1231 1313 1271 1311 1442
1650 1651	H. L. T. & Co Phillips, No. 1	dodo Davis Farmdodododo	dodododododododododododo	1441 1442 1441 1439 1430

#### CHAPTER XXVI.

ON THE RESULTS OF SURVEYS IN 1876-7 MADE FOR THE PURPOSE OF RECTIFYING THE SYSTEM OF RAILROAD AND OIL WELL LEVELS THROUGHOUT NORTH-WEST PENNSYLVANIA

By J. F. CARLL, Assistant Grologist in Charge of the Survey of the Oil Regions.

(Read before the American Philosophical Society, May 4, 1877.)

No attempt has heretofore been made to compare and adjust the levels of the numerous lines of railroads interlacing the Oil Regions; consequently considerable misapprehension exists, not only as to the true ocean levels, but also as to the relative levels of many places frequently quoted and taken as points from which to calculate the fall of the surface and streams, or the dips of the oil rocks.

Within this district not one point of elevation has been proven to be correct. Harrisburg, Pittsburg and the surface of Lake Erie are the nearest reliable points we have; and their true heights above mean ocean level have only recently been fixed through the well directed and successful efforts of Mr. Jas. T. Gardner, Geographer to the United States Geological and Geographical Survey of the Territories, under the charge of Dr. F. V. Hayden, United States Geologist.

These elevations above mean surface of the Atlantic ocean—Harrisburg 320', Pittsburg 745', and Lake Erie 573'—are now adopted; and from them we propose to carry forward the railroad lines of this district, to compare their intersections and junctions, and to fix and adopt certain points of elevation on which to base our geological work.

This, perhaps, should have been one of the first tasks of the Survey, but the material for it could not at that time have been immediately obtained; for even now, after working toward the point for three years, much is wanting to make the adjustment as complete as could be wished.

The road most closely connected with the work of this district is the Pittsburg, Titusville and Buffalo railway.† It passes through the heart of the Oil Regions, along the valleys of the Allegheny river and Oil Creek from Pittsburg to Corry, and thence over the "divide" to Brockton. Unfortunately, its levels have been very unreliable; not so much, as we discover, now, from inaccuracy in the original instrumental work, as from a want of care in adjusting the datum planes of the several roads composing the present continuous line, to ocean level.

The elevation of Oil City, based on these levels, has been variously given from 995' to 1,049' above tide.* Other places along the line have varied in the same manner, but not to so great a degree. There was also a want of agreement with the railways intersecting it, at the West Pennsylvania railroad. junction, at Red Bank, at Parker's, at Oil City, and at Corry. In 1875 the engineers in charge of the A. V. R. R. re-leveled its track from Kittanning up to South Oil City, but their work was based on the Kittanning bench-mark, the true elevation of which was in doubt. So that previous to the commencement of these examinations and our adjustment of the levels, we had not been able to secure a single elevation along the A. V. R. R. on which it seemed safe to rely.

As the shortest way out of these difficulties, and to establish some reliable base for the use of the survey, a re-leveling of the road, as far as might be necessary, was resolved upon. Accordingly, early in February, 1877, Mr. John H. Carll and Mr. Arthur Hale, provided with a superior railroad level and staff, proceeded to Pittsburg to commence the work.

Every facility was afforded by the chief engineer of the rail-way, Mr. H. Blackstone, to whom our thanks are due for these courtesies, for the examination of profiles and note books, and all the data of use secured from the office of the railroad company.

Our fevels were commenced at the Union depot bench-mark, and carried forward continuously to the old Kittanning bench-

^{*}Meaning mean high tide at Philadelphia, Pennsylvania railroad datum...
†This road is composed of the A. V. RR. from Pittsburg to Oil City, the
Oil Creek RR. to Corry, and the Cross Cut RR. to Brockton.

mark. A table comparing the results with a railway profile is appended. It shows a difference of only  $\frac{92}{100}$  of a foot between the railway profile elevation of the Kittanning benchmark and our own; and establishes the height of this bench at 809.94' above the mean surface of the Atlantic ocean.*

From Kittanning to South Oil City there is a rise of 299.20', according to the railroad levels of 1875. But in a table of elevations furnished the Smithsonian Institution by the engineer of the road shortly after its completion, the difference between the same points is given as 298'. The levels of 1875, consequently, make the elevation of South Oil City 1,009', the old levels 1,008'.

From W. Pennsylvania Junction our re-leveling was carried on up the Butler Branch railroad to Great Belt City. Here connection was made with our line carried along the oil belt by Messrs. Hatch and Hale in 1875, and by Messrs. Chance and Hale in 1876. This last named line was then adjusted to the Pittsburg datum, traced back to Parker's depot and found to coincide there within  $\frac{1}{10}$  of a foot with the Allegheny Valley railroad, corrected elevation—thus showing a very reliable circuit from Allegheny Junction to Great Belt, from Great Belt to Parker's, and from Parker's back to Allegheny Junction. So far the levels appear to be satisfactory.

From Parker's to Oil City the following check was kindly furnished by Mr. D. Jones Lucas, resident engineer of the Union Pipe company. Mr. Lucas ran a line of levels across the country in 1875 from Parker's depot to Oil City, (Union Depot,) and found the difference in elevation to be 118.9'. This, added to our accepted elevation of Parker's, 889', gives 1,008' as the proper height of Oil City (U. Dep.) which is 0.45' lower than the South Oil City depot.

We now have these figures, using the decimals, for Union Depot, Oil City.

It seems safe therefore to accept 1,008' as the established elevation of this point.

^{*}As established by United States Coast Survey in New York harbor.

Our levels thus adjusted to Oil City, the next step was to connect the termini of the several Railroads centering there, with the Union Depot. When this was done the following rather discouraging results appeared:

rannor discourage and are aff	
Union Depot accepted elevation	1008'
Dodoby levels of O. C. & A. R. R.	9951
DodododoA. & G. W. R	
DododoL. S. & M. S. R	

The O. C. & A. R. levels appear to agree with the P. & E. and were supposed to be based on the P. R. R. datum at Philadelphia, which required an addition of 7' to reduce it to ocean and make it conform to Lake Erie at 573' above ocean. The A. & G. W. and L. S. & M. S. levels came in direct from Lake Erie. There was evidently some error between Oil City and the Lake if our accepted elevation of the Union Depot was correct. We endeavored to find it by connecting together the several Depots and bench-marks obtained from the railroad profiles, at Franklin, Irvineton, Corry, Union City and Erie, but did not succeed, and finally as a last resort, re-leveled the P. & E. R. R. from Union City to its junction with the L. S. & M. S. at Erie, and to the Lake.

To our surprise, the profile of the P. & E., which had been considered unreliable, was found to be remarkably correct, except as to ocean datum. The stations checked closely in every case, except in one or two instances where no doubt there had been an alteration of track, and the difference of elevation between Union City and the crossing at Erie as given by it and as ascertained by our levels varied only 0.08'.

By connecting the P. & E. Depot at Union City with the A. &. G. W. Depot at the same place it was found that these two roads gave precisely the same fall from Corry crossing to Union, so that it was not deemed necessary to re-level that part of the P. & E. Rail Road.

From the Erie crossing above mentioned, connection was made with the L. S. & M. S. Depot at Erie, and, also, a line was run direct to the Lake. The line to the Lake confirmed the elevation given by the L. S. & M. S. R. R. for the Depot at Eric. It showed about six inches less elevation, but this is probably due to full water in the lake at this season of the year.

The P. & E. levels may therefore be considered as well tested and checked from the lake to Corry crossing, and they establish the latter point as will be seen further on at 1,427' above ocean (at New York).

When we inquire into the reason why 1,416' was given on the old P. & E. profile as the elevation of the old Corry depot, and A. & G. W. Crossing, instead of 1,427' as it should be; we find that the levels of this end of the road, as far east as Warren (how much farther we do not know) were run from the Lake. They were based on lake level at 565', the accepted elevation of the lake at the date of that Survey, and were consequently 8' too low. In addition to this there seems to have been an error in placing the old P. & E. Lake Depot 8' above the surface of the Lake. It should have been 11' as the levels now show. It appears quite probable that this 3' error in starting at the lake was discovered and corrected in some of the engineer's notes, for I have a copy of the levels from Irvineton, west, procured from the Smithsonian Institution in which the Stations are all raised 3' above Burgin's profile. This 3' error added to the 8' difference between former and present accepted lake level, makes the 11' which we are obliged to add to raise the road to its proper height above the ocean and to place it in its true horizon to meet the levels brought up from Pittsburg.

 Do.
 do
 L. S. & M. S. profile (XI)
 = 687

 Do.
 do
 Carll's levels to lake
 = 687

As the levels and checks above mentioned appear to establish the correctness of the P. & E. profile from the Erie crossing to Corry we see no reason to doubt its integrity as far as the same parties carried forward their line, which we are informed by one who assisted in the Survey, was as far as Warren. We therefore propose to raise all the stations between the Lake and Warren 11'.

We now find that the Union and Titusville or O. C. & A. R. R. R. * must be raised 13' at Union City above the published

^{*}The U. & T. is now a branch of the O. C. & A. R. R. R.

levels to lift it to the P. & E. at that place, and 13' also at the other end at Irvineton to make it coincide there with the P. & E. This brings Oil City up also and makes it agree (995'+13' =1008') with our accepted elevation, as will be shown further on.

Another interesting fact is brought to light by this discussion. The levels of the O. C. & A. R. R. were run from a datum given in the field book as "Elevation of track on bridge east of Irvineton Station on P. & E. R. R. above tide water at west end of Market Street bridge at Philadelphia=1160."

This is, no doubt, the point given by Burgin as "Irvine 1162" and it explains why (having started 2' too low) the O. C. & A. R. R. requires to be raised 13', while the P. & E. is only raised 11'. It also shows that the O. C. & A. R. R. datum was not the P. R. R. datum as supposed, but ocean datum, based on Lake Erie at 565', subject to the same error of 11' as the P. & E. with the additional 2' made in the starting point at the bridge.

The two tables of the P. & E. levels (the Company's and Burgin's) given by Mr. Allen, in his R. R. levels of Pennsylvania, contain in themselves the evidences of inaccuracy. The Company's profile datum is "Mid tide Baltimore." Burgin's is P. R. R. datum on the east end and Lake Erie based on ocean on the west end (but now shown to be 11' too low), yet both profiles give the same elevation at Corry crossing, and I believe, run exactly together from Corry to the lake, if they could be compared at precisely the same points. They seem both to have been made from one line of levels. Where the error in joining the line run from the east with the line run from the west may have occurred, we do not know,* but certain it is that no "P. R. R. datum" or "mid tide Baltimore datum" levels have been correctly brought through to Irvineton.

Mr. Gardner, in his discussion of R. R. levels to establish the surface elevation of Lake Erie, says, Lake Erie is above Harrisburg by P. & E. levels 251'; this added to the height of

^{*}It seems quite probable, we think, that the error will be found between West Creek Summit near St. Mary's and Clarion Summit near Kane. In that case West Creek Summit should be raised 19', to correspond with Emporium, and all stations between Kane and Warren 11', to correspond with the Lake end of the line.

Harrisburg, 319.75'=Lake Erie 570.75'. If the levels of this road were run from Harrisburg west and from the lake east, it is perceived at once that the P. & E. levels had nothing whatever to do with the difference of elevation between Harrisburg and the lake. It was only the difference between 314', the starting point at Harrisburg as given by Burgin, and 565', the starting point at Erie. The Harrisburg end was raised 5.75' to bring it up to correct ocean level, the lake end 8' to bring it up to accepted lake level; consequently the line showed an error of 2.25', making Lake Erie 570.75' instead of 573'. Of course it was supposed that the levels were connected throughout, but they could not have been correctly connected in fact, for we shall show that while the western end requires to be lifted 11' the centre needs to be raised from 19' to 23'.

We have met this same trouble in other roads in this district, where they have been run from one known, or supposed to be known, elevation to another. They agree at each end with the points given, but our cross checks lead to the suspicion that it has required some adjustment and alteration of the levels actually obtained to make them do so.

The re-leveling of the P. & E. RR. and the corroborative circumstances above given should establish the correctness of our Union City adopted elevation of 1,270' and our Corry adopted elevation of 1,427' at the crossing of P. & E. and A. & G. W. railways almost beyond a question. They cannot vary more than the fraction of a foot from the figures here given. They also furnish the data from which to adjust the levels of the O. C. & A. R. and Union and Titusville railways leading from the P. & E. to Oil City, as will be seen below.

Absolute accuracy is not, of course, to be expected in an adjustment of this kind; where the levels of different roads are to be tied together and compared. Slight errors necessarily creep into every profile—by the change in engineers employed, and consequent mistakes in benches and level points, which often are not plainly marked or described in the notes as they should be; by local alterations of track or change in position of depots not always carefully noted; by alterations at junctions and crossings made by one road and not recorded by the other;

and by clerical errors in copying and working up the notes and profiles.

In making these adjustments considerable time has been spent in the field in ascertaining the relative levels of depots, crossings, benches, &c. -at Pittsburg, Allegheny City, Freeport. Parker's, Franklin, Oil City, Irvineton, Titusville, Corry, Union City, Erie City, Girard and other places, and in every case more or less variation has been found, relatively, in the points. given-comparing them as they now are and as they were when originally established. These sources of error cannot now be eliminated without a careful re-leveling of the railway lines, which manifestly is an impossibility under the circumstances. It only remains for us to make the best practical use we can of the materials at command. As we have shown that they are somewhat defective, it would be folly to pretend to work out these hypsometric elevations to the decimal part of a foot. We shall not attempt it, but aim only to establish the levels of some of the more important points in this district within a foot or two of the truth, which is near enough for all practical purposes.

A.

The first line considered will be from Pittsburg to Lake-Erie by the Allegheny Valley, Bennett's Branch, Philadelphia. & Erie, and Buffalo, N. Y. & Erie Railways.

Ab. ocean,
745.
851
814
1022.
-

			Ab. ocean,
Olean Crossing	414	Above Emp. Junct. by B. N. Y. & P. pro-	
		file (XVII)	1436
Dodo	1438	Above ocean by N. Y. & Erie profile (Jer-	
_		sey City datum).	
Dodo	1435	Above ocean by B. N. Y. & P. profile.	
Dodo	2	Too high on N. Y. & Erie profile.	
Dodo	1	Too low on B. N. Y. & P.	
Lake Erie	862	Below Olean Crossing by B. N. Y. & P. profile (XVII).	
Dodo	864	Below Olean Crossing by N. Y. & Erie profile (XVIII).	
Dodo	863	Below Olean—mean of the above levels	573-

This line, it will be noted, lifts all the levels from Red Bank Junction to Emporium Junction 19 feet, and the B. N. Y. & Philadelphia levels 1' as far as Olean. It crosses the N. Y. & Erie Railway at Olean, two feet below the Erie levels which were run from tide at Jersey City, and would reach the Lake one foot too high if carried down by the B. N. Y. & Philadelphia levels, which give 862' fall. But we find that the N. Y. & Erie levels give 864' fall, so that a mean between the two, 863' subtracted from 1436'=573', the precise elevation as accepted for Lake Erie. The B. N. Y. & Philadelphia levels are said to have been run from the water of Buffalo Creek some distance from the lake, and may therefore be presumed to be based on a higher point than lake level.

Variations of from one to three feet will be found between different lines at nearly every point we are attempting to compare. As we are only using even feet in making this adjustment, a disagreement of one foot may sometimes occur in this way between two roads where there would really be but a very slight difference if the decimals were accurately taken into account.

B.

Pittsburg to Lake Erie, by the Allegheny Valley, Oil Creek and Allegheny River, Union and Titusville, and Philadelphia and Erie Railways.

and mile manway	<b>5</b> •		
			Ar. ocean
Pittsburg Oil city U. Depot Dodo Dodo Dodo Dodo Dodo Dodo Dodo	263 995 1007 1011 13 1	Accepted elevation	745 1008
Do	186 1181 1181 13 13 177 1258 1259 12	Above Oil City by O. C. & A. R. profile (VI).  Above ocean by O. C. & A. R. profile (VI).  Above ocean by U. & T. profile (VII).  Too low on O. C. & A. R. profile.  Too low on U. & T. profile.  Accepted elevation established by levels from the lake.  Above Titusville by U. & T. profile (VII).  (1271).  Above ocean by U. & T. profile (VII).  Above ocean by P. & E. profile (VIII).  Too low on U. & T. profile.  Too low on P. & E. profile.	1194 1270
Erie City L.S.&M.S.&P.&E. crossing. Dodo Dodo	583 583 676 11	Below Union City by P. & E. profile (VIII).  Below Union City by levels run by J. H. Carll  Above ceean by P. & E. profile (VIII).  Too low on P. & E. profile.	687 687
Erie City L. S. & M. S. Depot Dodo Dodo Lake Erie	0.72 113 113	Below Erie crossing (Carll's levels) Above ocean by L. S. & M. S. profile (XI) Above lake by L. S. & M. S. profile (XI) Above lake by Carll's levels. As above 686-113	686 686 578

This determination shows a very satisfactory line of levels from Pittsburg to the lake by raising the O. C. & A. R. and Union & Titusville railways 13 feet and the P. & E. railway 11 feet, and by throwing off all the decimals on the Allegheny slope and making the most of them on the lake slope. But even by doing this there is still an error of one foot to be accounted for at Union City, which is referred to more fully in remarks following determination C.

Mr. Gardner, in summing up his conclusions on the elevation of Pittsburg, says he is inclined to accept 746 in preference to 745 for the elevation of the Union Dépôt. But the levels of the railroads leading to the lake through this district conform better to the height we have adopted (745) and might even seem to suggest a lower level for Pittsburg.

C.

Oil City to Lake Erie, by the Oil Creek and Allegheny River railway to Irvineton and the P. & E. railway from Irvineton to the lake—using Burgin's profile of the P. & E. railway.

			Ab. ocean
Oil Cit-		A coombod oleration	7000
Oil City Irvineton Bridge	165	Accepted elevation	1008
ZZ VIEGOTO ZZIAGOTT		(VI)	1173
Dogo	1162	Above ocean by P. & E. profile (VIII).	
Dodo	1160	Above ocean by O. C. & A. R. profile (VI).	
Dodo	11	Too low on P. & E. profile.	
Dodo	13	Too low on O. C. & A. R. profile.	
Corry Crossing			
A. & G. W. & P. & E.	254	Above Irvineton by P. & E. profile	1407
Dodo	1416	(VIII) Above ocean by P. & E. profile (VIII).	1427
Dodo	1429	Above ocean by A. & G. W. profile (IX).	
Dodo	1418	Above ocean by O. C. & A. R. profile (VI)	
Dodo	11	Too low on P. & E. profile.	
Dodo	9	Too low on O. C. & A. R. profile.	
Dodo	2	Too high on A. & G. W. profile.	
A. & G. W. Depot,			
Union City.	128	Below Corry by A. & G. W. profile (IX)	1299
Dodo	1301	Above ocean by A. & G. W. profile (IX).	
Dodo	2	Too high on A. & G. W. profile.	
P. & E. Depot	00 00	Dolom A & C. W. Donot Timion City	
Union City	29.22	Below A. & G. W. Depot, Union City	1070
Dodo	157	(Carll) Below Corry crossing by P. & E. profile	1270
D0u0	10,	(VIII)	1270
Dodo	1259	Above ocean by P. & E. profile.	1210
Dodo	11	Too low on P. & E. profile.	
L. S. & M. S. & P. & E.		*	
Erie Crossing.	583	Below Union City by P. & E. profile	
3		(VIII)	687
Dodo		Below Union City by Carll's levels	687
Dodo	114	Above Lake Erie by L. S. & M. S. profile	
		and Carll (XI)	687
Dodo	676	Above ocean by P. & E. profile.	
Dodo		Too low on P. & E. profile.	
Lake Erie	114	Below P. & E. and L. S. & M. S. crossing as above.	573

The levels of the Dunkirk, Allegheny Valley and Pittsburg-RR. touching the P. & E. at Irvineton, are so widely astray and evidently unreliable as heretofore published that we can make no use of them in this connection to reach the lake. A trip to Dunkirk expressly for the purpose of examining the profiles, with a view of including the levels of the road in this discussion, resulted unsuccessfully from the want of a permit from headquarters in New York, and we are obliged to omit them altogether.

So too, unfortunately, with the Buffalo, Corry and Pittsburg railway, crossing the P. & E. at Corry, which would have given another link to the lake at Brocton. The published levels are so vague and uncertain that we must omit them also. Mr. Ashmead kindly permitted and assisted in a thorough search among the papers in his office at Oil City, but no profile or connected notes of the levels could be found.

If our accepted elevations of Irvineton, Corry and Union City are correct, and we have every reason to believe that they are, it appears quite evident that there must be some mistake in the levels of the O. C. & A. R. and U. & T. Railways, otherwise they would agree with our accepted elevations, if raised uniformly 13' at all points, instead of 13' at Irvineton, 9' at Corry and 12' at Union City. They start as we have shown at an elevation of 1,160' at Irvineton, which represents 1,162' on the P. & E. profile, and running around by Oil City and Titusville, reach Union City at 1,257' which should represent 1,259' on the P. & E. profile if all the levels were harmonious. From the published tables it would be inferred that the P. & E. Depot in the U. & T. tables was the same as the P. & E. depot in the P. & E. tables; but the U. & T. profile shows that the point 1,257' was the junction with the P. & E. and this junction is 1.39' lower than the depot. There is therefore a disagreement of one foot or more between the two lines of levels from Irvineton to Union City, the P. & E. being about 34 miles in length and the O. C. & A. R. and U. & T. about 92 miles. This is not sufficient to cast doubt upon the main line of levels and. we therefore accept them as correct as far as Tryonville Junction, presuming that the error lies somewhere quite near Union City. for we find our levels there between the crossings and Depotsto differ quite materially from those given by the U. & T. profile, as will be seen by reference to Union City levels.

We now have these three points apparently well established.
Tryonville Junetion
Corry
Union City
Tryonville Junction is 111' below Corry by O. C. & A. R. (VI).

Do.....do..... 49' above Union City by U. & T. (VII).

Then caculating the elevation of Tryonville Junct. from Corry and Union City we have:

Tryonville by O. C. & A. R. levels 1427 - 111 = 1316.

Do.... by U. & T......do...1270 + 49 = 1319.

The relative elevations of Corry and Union City are well assured by the exact agreement of the P. & E. and A. & G. W. levels between those places, and we therefore can only conclude that there is an error of one foot to be accounted for on the U. & T. profile between Tryonville Junct. and Union City, and an error of 4' on the O. C. & A. R. profile between Tryonville and Corry which we have been unable to place and must, therefore, leave for future adjustment.

Oil City to Ashtabula, by Franklin Branch of Lake Shore and Michigan Southern Railway.

			Ab, ccean
Oil City		Accepted elevation	1008
Stoneboro	160	Above Oil City by L. S. & M. S. profile (XII)	1168
Do	1171	Above ocean by L.S. & M.S. profile (XII)	1100
Do	1171	Above ocean by N. C. & F. profile (XIV)	
Do	3	Too high on L. S. & M. S. profile.	
Do	3	Too high on N. C. & F. profile.	
Salem Crossing	184	Below Stoneboro by L. S. & M. S. profile (XII)	984
Dodo	987	Above ocean by L. S. & M. S. profile (XII)	204
Dodo	982	Above ocean by A. & G. W. profile (IX)	
Dodo	3	Too high on L. S. & M. S. profile.	
Dodo	2	Too low on A. & G. W. profile.	
Jamestown	3	Above Salem Crossing by L. S. & M. S.	
	1	profile (XII)	987
Do	990	Above ocean by L.S. & M.S. profile (XII)	
<u>D</u> o	979	Above ocean by E. & P. profile (XIII).	
<u>D</u> o	3	Too high on L. S. & M. S. profile.	
Do	8	Too low on E. & P. profile (a).	•
Ashtabula	342	Below Jamestown by L. S. & M. S. profile (XII)	645
Do	648	Above ocean by L. S. & M. S. profile (XII)	040
Do	3	Too high on L. S. & M. S. profile (b).	
1/0 *		. 100 mgm on 21 or at the bi promo (o).	

- (a) The two depots here are not on precisely the same level, but there certainly cannot be 11' difference in their elevations. The Eric & Pittsburg appears to be wrong wherever we check it.
- (b) These levels, according to profile, run into Ashtabula at the proper elevation (74.52) to agree with the levels of the main line which are accepted as correct. But it is hard to explain why the Franklin Branch overruns the A. & G. W. at Salem Crossing, at Franklin, at Reno, and at Oil City, while the same levels of the L. S. & M. S., taken at Erie Crossing and carried to Union City by the P. & E. Railway, run under the A. & G. W. at that place. The P. & E. levels from Erie to Union City were re-run but no error could be discovered there. We have no ground for charging the whole mistake to the A. & G. W., for their levels, as will be seen in another place, bear every evidence of more than ordinary precision from Salamanca to Dayton. It would appear as if the Franklin Branch of the L. S. & M. S. had been started from a higher point than that given on the main line as 74.52. But this, of course, is an inference only and may be entirely wrong.

E.

From Pittsburg to Stoneboro, by Pittsburg, Fort Wayne and Chicago to Homewood, New Castle and Beaver Valley to New Castle, and New Castle and Franklin to Stoneboro.

			Ab. ocean
Pittsburg		Accepted elevation	745
Homewood	204	Above Pittsburg by P. F. W. & C. profile	
		(XVI). Below Homewood by N. C. & B. V. profile	949
New Castle	147	Below Homewood by N. C. & B. V. profile	
Do	809	(XV) Above ocean by E. & P. profile (XIII) (a)	802
Do	7	Too high on E. & P. profile.	
Stoneboro	368	Above N. Castle by N. C. & F. profile	
_		(XIV)	1170
Do	160	Above U. City by L. S. & M. S. profile	
700		(XII) accepted (b)	1168
Do	1171	Above ocean by L.S. &M.S. profile(XII)	
Do	1171	Above ocean by N. C. & F. profile (XIV)	
<u>D</u> o	2	Too high by levels brought from Pittsb'g	
<b>D</b> o	3	Too high on L. S. & M. S. profile.	
Do	3	Too high on N. C. & F. profile.	

- (a) It is supposed that the elevation here given by the E. & P. refers to a point somewhat higher than the present Depot.
- (b) We prefer to accept 1,168' as the elevation of Stoneboro instead of 1,170', or 1,171' for several reasons. From Pittsburg to Oil City by the line just followed we find a rise of 265, while from Pittsburg direct to Oil City by the Allegheny Valley Railway levels well tested we have a rise of 263.' is an error of 2' feet somewhere in the circuit. The L.S. & M. S. levels are too high at Oil City when compared with the A. V., the O. C. & A. R. and the A. & G. W.; they are too high again at Franklin, compared with the A. V. and A. & G. W.; too high at Salem Crossing, compared with the A. & G. W.; and too high at Jamestown compared with the E. & P. We are not certain that the connecting link between N. Castle and Stoneboro show precisely the difference in elevation between the Depot of the N. C. & B. V. at N. Castle and the Depot of the L.S. & M.S. at Stoneboro. There might easily be a difference of 2' between the Depots of the N. C. & F., and those of the other roads named. Our accepted level at Oil City appears to be a mean between the highest and lowest levels given wherever a check can be secured, and it therefore seems safe to adhere to it.

F.

Review of the levels of the Atlantic and Great Western Railway.

			Ab. ocean
Salamanca	1393	Above ocean by A. &. G. W. profile (IX). Point given as centre of Hemlock street.	
Do	1384	Above ocean by N. Y. & Erie profile (XVIII).	
Present Depot Old Depot Present Depot	14.2	Supposed to be the old Depot. Lower than Hemlock street. (Carll). Lower than Hemlock street. (Carll). Above ocean by A. & G. W. levels (1393)	
Dodo		-1). Above ocean by N. Y. & Erie levels (1384+13.	
do		Accepted elevation	1393

The N. Y. & Erie, as before stated, reaches the lake 2' too high, so that there appears to be but 3' disagreement between

the levels of the A. &. G. W. and N. Y. & Erie, if we have taken our points correctly, and 1,393' will be a fair mean between the two for the present depot.

Levant, Accepted elevation as given by A. & G. W. (IX)...... 1'267

The D., A. V. & P. Railway coming up from the lake at Dunkirk crosses the A. & G. W. here. The elevation given by it is 1,262' (Allen CCCVI), but it does not appear to be reliable.

Corry, A. & G. W. 2' too high as shown in C.

Union City, A. & G. W. 2' too high as shown in C. Salem Crossing, A. & G. W. 2' too low as shown in D.

			Ab. ocean.
Clarkesville Cross'g, Do Do Do	46 936 930 2 8	Below Salem Crossing (D) = 984-46 Above ocean by A. & G. W. profile (IX) Above ocean by E. & P. profile (XIII). Too low on A. & G. W. profile. Too low on E. & P. profile.	938

At Jamestown the E. & P. was 8' too low (D) by our accepted elevation, and 11' too low by L. S. & M. S. levels, and here we find it 8' too low by our adjustment, and 6' if the A. & G. W. is correct—while at N. Castle (E) it is 7' too high. In the first and last places the difference may be in a measure due to a want of unity in the points given by the several roads, but until we have more positive information on these points, the E. & P. levels must be regarded as very unreliable.

Further Checks on the A & G. W. Railway in Ohio:

			Ab. ocean
Ravenna Crossing	522	Above Lake Erie by A. & G. W. profile. See Ohio Geological Report, Vol. I, p.	
Do	519	667	1095
	3	burg profile. (Authority, J. Linton, Chief Engineer)	1092
Newburg Crossing	175	Above Lake Erie by A. & G. W. profile	
Do	174	(IX)	748
20	7, 7	ton)	747
Callian	700	Disagreement.	
Gallion	996	Above Lake Erie by A. & G. W. profile. (O. R. I, p. 667)	1169

			Ab. ocean
Gallion	595	Above Lake Erie by C. C. C. & I. profile (O. R. I, page 668).	1168
Urbana	1 <b>4</b> 54	Disagreement. Above Lake Erie by A. & G. W. profile.	1027
Do	458	(O. R. I, p. 667)	1021
	4	Disagreement, relative levels of depots unknown.	
Dayton	179	Above Lake Erie by A. &. G. W. profile. (O. R. I, p. 667)	752
Do	180	Above Lake Erie by D. & M. profile. (O. R. I, p. 671.	753
	1	Disagreement.	

The Dayton and Michigan Railway check is used by Mr. Gardner (page 644) and accepted as reliable.

East end of the Philadelphia and Eric Railway, compared with the Northern Central.

			Ab. ocean
P. R. R. Datum			6.913
Harrisburg	313	Above P. R. R. datum by P. R. R.	900
Bridgeport Crossing,	29	profile. (Allen 1)	320
Bridgeport Crossing,	210	(Allen T)	349
Do	30.25	Above Harrisburg by N. C. profile.	350
Sunbury		(Gardner, p. 635)	500
,Dumbury		CC.).	444
Do	428	Above ocean by P. & E. profile. (Allen CUXV).	
Do	430	Above ocean by Burgin's profile. (Allen CCXV).	
	16	Too low on P. & E. profile.	
Tunnation	14	Too low on Burgin's profile.	1
W'msport Junction,		Above ocean by N. C. profile. (Allen CCXVII)	5.540
Dodo.,	516	Above ocean by P. & E. profile. (Allen CCXV).	
Dodo		Too low on P. & E. profile.	
DoDepot	5.59	Below Junction by P. & E. profile. (Allen CCXV).	•
		On Northern Central basis (540-6)	534
Dodo	510	Above ocean by P. & E. profile. (Al-	
		len CCXV).	
:Dodo	513	Above ocean by Burgin's profile. (Allen CCXV)	1

328 I.I. OIL WELL RECORDS. J. F. CARLL, 1877.

			Ao. ocean
W'msport Junction, Dodo ElmiraDo	24 21	Too low on P. & E. pmfile. Too low on Burgin's profile. By N. C. profile. (Allen (CCXVII) By N. Y. and Erie profile. (Allen CLXII)	865 863

This last check makes the Northern Central levels appear good. The levels of the N. Y. and Erie Railway have been brought up from Jersey City, about 273 miles, and those of the Northern Central from Baltimore, 256 miles, showing a disagreement of only two feet at Elmira. It seems quite safe, therefore, to assume that the P. & E. elevations of Sunbury and Williamsport are altogether too low, as they have likewise been shown to be at Driftwood, Emporium, Irvineton, Corry, Union City and Erie.

#### CHAPTER XXVII.

COMPARISON OF LEVELS RUN BY JOHN H. CARLL, FEB., 1877, WITH THE A. V. RR. LEVELS. BOTH REDUCED TO THE SAME DATUM, OCEAN LEVEL.

	1		<del>,                                      </del>
	A. V. RR.	J. H. C.	Dif.
		W. 1 = 00	
B. M., Union Depot, Pittsburg	745.26	745.26	
B. M., A. V. RR. datum, Pittsburg (a)	741.12	741.12	0.00
Top of rail opp. 50th street, Pittsburg	737.70	738.92	+1.22
Same line from A. V. RR. datum to 50th street,			
re-leveled	737.70	739.04	+1.34
Top of rail opp. 4th mile post	742.10	742.97	+0.87
Dodo 5thdo	746.50	747.22	+0.72
Dodo 6thdo	746.70	747.36	0.66
Dodo 7thdo	745.10	746.41	+1.31
Dodo10thdo	745.20	745.88	+0.68
-Dodollthdo	755.70	757.70	-1.00
Dodo12thdo	778.20	778.97	$\pm 0.77$
DodoJohnson Station	759.40	759.94	+0.54
DodoLogan's Station	755.10	756.65	+1.55
DodoPochatoe Bridge	755.40	756.64	+1.24
Dodo. Parnassus Station	762.00	763.40	+1.40
DodoArnold's Station	792.10	793.49	-1.39
DodoTarentum Station	777.10	777.97	$\pm 0.87$
Dodo21st mile post	770.20	773.37	+3.17
DodoWest Penn. Junc	789.85	790.64	$\pm 0.79$
B M on "Sugar Tree" W. P. June	782.72	783.44	+0.72
B. M. on "Sugar Tree," W. P. Junc B. M. on Kiskiminetis Bridge	793.21	794.00	$\pm 0.79$
Top of rail opp. 33d mile post	782.70	784.33	+1.63
Do do White Rock Station	780.60	782.39	+1.79
Dodo34th mile post	778.10	780.36	+2.26
Dodo. Kelly's Station	778.60	780.62	+2.02
Dodo35th mile post	779.50	781.34	-1.84
	793.35	794.52	-1.17
B. M. on "Hickory 55 ft. Right"	785.10	786.50	1.40
Top of rail opp. 37th mile post	786.90	788 39	1.49
DodoRoston Station		789.77	
Dodo41st mile post	787.60		$^{+2.17}_{-0.08}$
Dodo42ddo	797.70	797.62	
DodoManorville Station	796.40	797.87	+1.47
B. M. in Kittanning (b)	809.02	809.94	+0.92

(a) Top of stone foundation, of sixth post from north end, of Pittsburg and Ft. Wayne RR. Freight Depot, opposite engineer's office A. V. RR.

This bench is not marked in any manner to designate it from the other foundations of the freight depot. Mr. Blackstone, the chief engineer of the A. V. RR., personally pointed it out to John H. Carll when he commenced work, and the levels run from it to the Union Depot B. M., show precisely the same difference, 4.14′, that is given on the A. V. RR. profile.

At the first point of comparison (Fiftieth street) and at every subsequent one up to the bench-mark at West Penn Junction, the track was found to be above the railway profile. This is due no doubt to alterations of the track in some places, but the fact that the West Penn Junction B. M. appears to be 0.72' too low, and that a difference even greater than this shows itself at the first point of comparison at Fiftieth street and continues all the way through to the junction, suggests the inquiry whether the A. V. RR. levels may not have been run in the absence of the chief engineer (who seems to be the only person able to point out the freight depot B. M.) from a point about 9 inches lower than the true bench, either by not starting from the right one of this row of pillars or by holding the rod on the second course of stone instead of on the top.

On discovering the first disagreement at Fiftieth street our line was carefully re-run from the A. V. RR. bench, and it agreed so nearly with the first line (as shown above) that no concession could consistently be made to harmonize our levels with those of the railroad engineers.

(b) Top of corner of curb-stone in front of the Valley Central Hotel, corner of Grant avenue and Market street, Kittanning—marked +.

L WOOWIY LICOUS.	Pittsburg	Levels.
------------------	-----------	---------

			Ab. ocean
B. M. Union Depot A. V. RR. B. M W. P. RR. June.	4.14	Accepted elevation Below Union Depot B. M	3745.26 741.12
with P., Ft. W. & C. RR East Lane crossing	6.51	Below Union Depot B. M. (Carll)	738.75
of W. P. RR	3.58	Below Union Depot B. M. (Carll)	741.68

#### PITTSBURG LIVELS-Continued.

*			Ab·ocean
East Lane crossing			
of W. P. RR	743	Above ocean by W. P. RR. profile.	
east Lane crossing of W. P. RR	1.32	Too high by W. P. RR. profile.	!
Sycamore st. cross. of W. P. RR	3.86	Below Union Depot B. M. (Carll)	741.40
Sycamore st. cross. of W. P. RR Sycamore st. cross.	743	Above ocean by W. P. RR. profile.	
of W. P. RR Connellsville De-	1.60	Too high by W. P. RR. profile.	
pot B. M.	10.16	Below Union Depot B. M. (Carll)	735.10
por 27 12	735.00	Above mid-tide, Baltimore, by B. & O.	100.10
	0.10	RR. profile. Too low by B. & O. RR. profile.	
Pittsburg Oil Well,	3.10	Too tow by D. & O. Ittle promie.	
on Boyd's Hill	107.02	Above Union Depot B. M	852.28

## Franklin Levels.

			Ab. ocean
A. V. RR. Depot L. S. & M. S. Depot	25.33	Accepted elevation	988.40 1013.73
Dodo	1017	Above ocean by L. S. & M. S. RR. pro- file.	
Dodo A. & G. W. depot Dodo	3.27 0.49 987	Too high by L. S. & M. S. RR. profile. Above A. V. RR. Depot (Carll) Above ocean by A. & G. W. RR. profile.	988.89
do	1.89	Too low by A. & G. W. RR. profile.	

# Oil City Levels.

			Ab. ocean
Union Depot Dodo		Accepted elevation	1008.00
Dodo	1.47	Above A. & G. W. bridge over Oil Creek, E. end (Carll).	
Doào	1.99	Above A. & G. W. bridge over Oil	
A. & G. W. bridge.	1005.00	Creek, W. end (Carll).  By A. & G. W. profile (precise point not given).	

## OIL CITY LEVELS-Continued.

Union Depot Dodo	1006.47 }	By A. & G. W. RR. profile.	
Dodo	1.53	Too low by A. & G. W. RR. profile.	
Dodo		Above L. S. & M. S. Depot, W. side, (Carll).	
L. S. & M. S. Depot	1009.80	By L. S. & M. S. RR. profile.	
Union Depot Dodo	1011.41 3.61	By L. S. & M. S. RR. profile. Too high by L. S. & M. S. RR. profile.	
O. C. & A. V. Junc.	1.73	Above Union Depot	1009.73
B. M. on A. V. RR. river bridge	7.42	Above Union Depot	1015.42
South Oil City De- pot		Above Union Depot	1008.45

# Irvineton Levels.

			Ab. ocean
P. & E. bridge		Accepted elevation	1173.00
Upper Junction O. C. & P. & E. RR P. & E. Depot O. C. Depot	0.39 3.01 4.92	Below P. & E. bridge Below P. & E. bridge Below P. & E. bridge	1172.61 1169.99 1168.08
Lower Junction O. C. & P. & E. RRs.		Below P. & E. bridge	1169.96
D. A. V. & P. RR. Depot		Below P. & E. bridge	1170.33

# Corry Levels.

	•	
		Ab.ocean
P. & E. and A. & G.		
W. Crossing.	Accepted elevation	1427
P. & E. Depot	39 Above P. & E. and A. & G. W. KR. Cross-	
1	ing (Carll)	1429.39
Dodo 3.		
	P. & E. profile.	
A. &G. W Depot 2.	Above P. & E. and A. & G. W. Cross. by Carll	1429.29
D- 3- 0	Carll	1429.29
Do	00 Above P. & E. and A. & G. W. Cross. by A. & G. W. profile.	
Center St. Crossing	A. & G. W. prome.	
0. C. RR	04 Above P. & E. and A. & G. W. Crossing	
1st Av. Crossing O. C.	(Carll)	1430.04
RR 8	(Carll) 21 Above P. & E. and A. & G. W. Crossing	
P.&E. and B. C. & P.	(Carll)	1435.21
RR. Crossing13	02 Above P. & E. and A. & G. W. Crossing	1440.00
P. Crossin a	(Carll)  Above P. & E. and A. & G. W. Crossing (Carll)  Above P. & E. and A. & G. W. Crossing	1440.02
nn. Crossing	by P. & E. profile.	i
	of T. or II. broute.	

#### CORRY LEVELS-Continued.

	ORRI DEVELS—Commuea.	Ocean.
A. & G. W. and B. C.		l
& P. RR.Crossing 14.3	Above P. & E. and A. & G. W. Crossing	
A. & G. W. and B. C.	(Carll)	1441.31
& P. RR. Crossing. 15.0	(Carll)	
i i	hrr A &r C TX7 mmofile	ł
Logan's Summit 13.2	Above P. & E. and A. & G. W. Crossing	
	(Carll)	1440.22
Dodo13.0	(Carll)	
	(Burgin).	
O.C.& B. C. & P. June, 14, 5	Above P. & E. and A. & G. W. Crossing	
3,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0	(Carll)	1441 59
Do do 14.9	(Carll)	1111.04
20	(P. & E. profile and Caril).	
	/ (1. w 2. promo and cam).	

# Union City Levels.

P. & E. Depot	 Accepted elevation	1270
U. & T. and P. & E.	_	
June	Lower than P. & E. Depot (Carll)	1268.61
U. & T. and A. &		
G. W. Cross	Above P. & E. Depot (Carll)	1301.12
A. & G. W. Depot,	Above P. & E. Depot (Carll)	1299.22
U. & T. and P. & E.	Ahama aaaan huu TT Su Mi maasila	
June	Above ocean by U. & T. profile.	
U. & T. and A. &	do do do	
	dododo. dododo.	
	dododo.	
U. & T. and A. &		
	Above P. & E. Depot by U. & T. profile.	
	dododo.	
		<del></del>

## Erie Levels.

	Accepted elevation  Above Lake Erie, levels taken by J. H. Carll, March 7th, 1877, when the water was higher than ordinary.	6 <b>9</b> 6
RR. Crossing, 113.08	Higher than west end of Union Depot.  Above Lake Erie (Carll). dodoaccepted	687

Elevation above ocean of a number of datum points, which	en nave
been used by engineers in this section of the State.	
Brady's Bend Iron Company's "high water mark of	
the Allegheny river in 1865"	849.91
Brady's Bend Iron Company's datum "100' below high	
water of 1865"	<b>7</b> 49.91
Brady's Bend Bridge, "east abutment"	857.48
Brady's Bend, "low water in Allegheny river" -	817.48
Parker & Karns City R. R. datum, "100 below the	
south-east corner of stone abutment of	
Parker bridge"	775.67
The above are all based on the adopted levels of the gheny Valley R. R.	e Alle-
Atlantic & Great Western R. R. datum used in their	
former work "223.48' below surface of	
Lake Erie"=573—223.48=	349.52
Oil City, City Engineer's datum, "25' below the top	010.02
of the centre iron plinth-block east end	
of Centre street iron bridge over Oil	
Creek." On the basis of 1,008' for Union	
Depot, Oil City	980.13
Oil City, "low water in Oil Creek" relatively to City	000.20
Engineer's datum	985.13
Pittsburg, city datum, (Gardner)	699.20
Pittsburg, low water, (Gardner)	699.20
Pittsburg, high water, 1852, (Gardner)	729.88
Ennis Hill, Nettleton's datum in 1869 for his oil well	
levels	1726
This last point is on the east line of the Boro' of Pl	leasant-

It is the highest land in Venango county. Its elevation, based on Oil City at 995', was used in Report I, 1874, as 1,713'. We now raise it, and also all the other levels given in that report in connection with it, 13' to make it and them conform to our present adopted ocean levels, as established in the foregoing pages.

# Lake Elevations Above Ocean.

Champlain, Gardner	_	_	_	_				100.84
<u> </u>	_	_	-	-	-	-	-	
Ontario, Gardner	•	•	-	-	-	-	-	250.00
Erie, Gardner :	-	-	•	-	-	•	-	573.08
Huron, Gardner	-	-	-	••	-	-	-	589.15
Michigan, Gardner	-	-	-	-	-	-		589.15
Cassadaga, Chautauq	ua co	unty,	N. 7	7., by	leve	ls of :	D.	
A. V. & P. RR.	•		-	_	-	-	_	1305
Chautauqua, Chautar	uqua	coun	ty, N	. Y.,	by le	evels	$\mathbf{of}$	
B. C. & P. RR.	<u>-</u>	•	•	·	-	-	_	1299
Conneaut, Crawford	cour	ity, I	Pa., R	epor	t of (	Col. 7	W.	
M. Roberts, 1840	-	-	•	_	-	_	-	1082
Oil Creek Lake, Cra	awfo:	rd co	unty,	Pa.,	by le	vels	$\mathbf{of}$	
U. & T. RR.	-	-	-		-	-	_	1389
Sandy Lake, Mercer	coun	ty, Pa	., by	level	ls of	L.S.	&	
M. S. RR	•	-	•	-	•	-	+	1160
Conneauttee Lake, Erie county, Pa., by preliminary								
levels of the Penns	. and	l Peti	oleur	n RR	J•	-	•	1196

# Accepted Elevations above Ocean of some of the points mentioned in this discussion.

Localities.	County.	Ocean
Beaver Falls.		771
Bradford	M'Kean	
Brady's Bend (East)	Clarion	857
Brocton, N. Y	Chautauqua	724
Brookville		1235
Butler	Butler	1008
Carrollton, N. Y	Chautauqua	
Centreville	Crawford	
Clarksville Crossing	Mercer.,	
Cochran farm	Venango	
Cochranton	do	
Columbus, P. & E. Depot	Warren	
Corry, Union Depot	Erie	
Do. P. & E and A. & G. W. Crossing	do	1427
DeGolier		? 1510
Dilks	Butler	1307
Driftwood Junction	Cameron	
Emlenton.	Venango	905
Emporium Junction	Cameron	1022
Erie, Union Depot	Erie	686
Evansburg		
Fosters.	Venango	970
Foxburg		

	Venango	988
Franklin, A. V. Depot. DoL. S. & M. S. Depot.	do	1014
DoL. S. & M. S. Depot		989
	do	772
	Armstrong	
	Warren	1309
Garland., Gilesville	M'Kean	? 2016
Gilesville. Great Belt City. Greenville, A. & G. W. Depot. Harrisburg, Market Street Depot.	Butler	1260
Great Belt City	Mercer	986
Greenville, A. & G. W. Depol	Dauphin	320
Harrisburg, Market Street Depot	Butler	1301
Herman		1092
	Venango	949
	Beaver	
	Crawford	1252
Townston D & E bridge	Warren	1173
Tryington, I. & E. Dilago.	Chautauqua	1321
Jamestown, N. 1., A. & G. W. Dopos.	Mercer	987
Hydetown. Irvineton, P. & E. bridge. Jamestown, N. Y., A. & G. W. Depot. DoPa., L. S. & M. S. Depot.	Butler	1206
Karns City.  Keating Summit, B., N. Y. & P. RR.  Kittanning.	Potter	1879
Keating Summit, B., N. Y. & P. RR		810
Kittanning.  Lawsonham.  Levant (N. Y.) Crossing, A. & G. W. and D., A. V.	Armstrong	
Lawson ham	Clarion	919
Levent (N. V.) Crossing, A. & G. W. and D., A. V.		
& P. RR's	Chautauqua	1267
Limestone	M'Kean	? 1415
Limestone	Crawford	1382
lincoln ville	Butler	1106
Martinsburg		1080
Méadville Mercer, N. C. & F. Depot	Crawford	1094
Mercer, N. C. & F. Depot	Mercer	
Miller Harm	Venango	1131
New Bethlehem New Castle, N. C. & B. V. Depot	Clarion	1080
New Castle, N. C. & B. V. Depot.	Lawrence	802
Oil City Union Denot	Venango	1008
Oil City, Union Depot	Chatauqua	1436
Olean Crossing, N. 1	Venango	1032
Oleopolis	Mercer	945
		889
Parker, A. V. Depot	Clarion	
Petrolia	Butler	1177
Petroleum Centre	Venango	1089
Pittsburg, Union Depot	Allegheny	745
Pittsfield	Warren	1247
Raymilton	Venango	1135
Red Bank Junction	Clarion	851
Reynoldsville	Jefferson	1377
Reynolusville		1369
Riceville	Crawford	
Rochester	Beaver	706
Rouseville. Salamanca, N. Y., present depot Salem Crossing, A. & G. W. and L. S. & M. S. RR	Venango	1036
Salamanca, N. Y., present depot	Chautauqua	1393
Salem Crossing, A. & G. W. and L. S. & M. S. RR	Mercer	98 <b>4</b>
Saxonburg Station.	Butler	1201
Saxonburg Station. Scrubgrass	Venango	945
Snartanchura	Crawford	1454
Spartansburg		1392
Spring Creek. Stoneboro, L. S. & M. S. Depot.	Warren	
Stoneboro, L. S. & M. S. Depot	Mercer	1168
Summit, Bradford Br., Erie RR	M'Kean	2140
Sunbury	Northumberl'd	444
Tidioute	Venango	1113
Tionesta	do	1060
Titusville, O. C. Depot	Crawford	119 <del>1</del>
Tryonville Junction	do	1320
	Erie	1270
Union City, P. & E. Depot.		1299
DodoA. & G. W. Depot. Wampum. Warren, P. & E. Depot. West Pann Junction	do	
Wampulli,	Lawrence	800
warren, P. & E. Depot	Warren	1200
west Penn Junction	Westmoreland	791
Williamsport, P. & E. and N. C. Junction	Lycoming	540
West Penn Junction. Williamsport, P. & E. and N. C. Junction. DoDepot	do	534
Youngsville	Warren	1214
	.,	

#### CHAPTER XXVIII.

INDEX AND GENERAL CORRECTIONS FOR THE TABLES OF RAIL-ROAD ELEVATIONS IN AND ABOUT THE OIL REGION OF PENN-SYLVANIA. BY J. F. CARLL.

The following tables are published in this connection for the convenience and easy reference of those who may read the foregoing discussion, and who may not have a copy of Mr. Allen's more elaborate and complete report on the railroads of the State.

Our study of these levels convinces us that while they are in the main as nearly correct as may be necessary for all practical purposes, they cannot possibly be joined together in one harmonious net-work spreading over the district. Variations of a foot or two occur at almost every crossing or junction. Much must depend on good judgment in the use of these levels, for positive accuracy cannot be reached by any manipulation of the data at command.

In basing the work of this district on the tables here published we would propose to use the figures given in the 2d column, corrected in some cases as below.

I.	Allegheny Valley RR.,	-	-	-	Correct
II.	West Penn RR., -	-	-	-	44
III.	Butler Branch RR.,	-	-	-	"
IV.	Low Grade Division of A.	. v. :	RR.,		46
V.	Parker & Karns City RR.	, -	-	-	44
VI.	Oil Creek and Allegheny	Rive	r RR., co	rrect	as far as

VI. Oil Creek and Allegheny River RR., correct as far as Tryonville Junction, then drop 1 foot at Spartansburg and 4 feet at Corry.

VII. Union & Titusville RR., correct as far as Lincolnville. Union City, 1,299 feet and 1,270 feet.

VIII. Philadelphia & Erie RR., - - Correct. 22—I.I.

- IX. Atlantic & Great Western RR., correct to Jamestown,
  N. Y. Drop 2 feet at Corry and Union City. Correct at Meadville. Raise 2 feet at Salem Crossing and Clarksville Crossing. Mahoning Division probably nearly correct.
  - X. Franklin Branch A. & G. W. RR. Raise Oil City end 1 foot.
- XI. Lake Shore & Michigan Southern RR., Correct.
- XII. Franklin Branch L. S. & M. S. RR. Drop all stations 3 feet.
- XIII. Erie and Pittsburg RR. Doubtful; use with caution.
- XIV. New Castle & Franklin RR. Drop New Castle end 1 foot; Stoneboro.end 3 feet.
  - XV. New Castle & Beaver Valley RR. Drop all stations 1 foot.
- XVI. Pittsburg, Fort Wayne and Chicago RR. Drop all stations 1 foot.
- XVII. Buffalo, N. Y. & Philadelphia RR. Lift all stations from Emporium to Olean 1 foot.
- XVIII N. Y. & Erie RR. Apparently 2 feet too high on the west end, and 2 feet too low on the east end.

I.

## Allegheny Valley Railroad.

## From RR. profile and our own levels.*

Miles fr. Pittsburg		Ab. 6	cean.
Ħ.		Profile vatio	
7:		rofile Ele- vations	Corrected levels.
£		016	, ∯,@
ğ		26 m	, 9 <del>,</del> 55
5		15	ž
- 00			<u>:</u>
0	Pittsburg, Union Depot	745	. 745
3.4	M'Candless		740
4.4	Sharpsburg		745
6.0	Brilliant		747
6.6	Waring		747
7.7	Wildwood		747
8.8	Sandy Creek		746
9.3	Armstrongs		746
9.9	Iona		746
10.3	Verona	745	746
11.2	Edgewater		761
11.8	Hulton		778 760
15.1	Johnson	759	757
16.5	Logan's Ferry	755 762	763
17.4	Parnassus	792	793
19.0	Arnolds	192	789
20.7	Tarentum.	777	778
22.2	Chartiers.		765
22.9	Soda Works		761
27.2	Garver's Ferry		785
28.8	West Penn Junction(II)	790	791
29.1	Schenlev's		795
30.0	Aladdin		-793
33.4	White Rock	781	782
34.6	Kelley's	779	781
36.8	Logansport		785
39.2	Roston	787	788
42.3	Manorville	796	798 810
44.5	Kittanning	809 808	809
47.7	Cowanshannoc	811	812
49.5	Pine Creek	823	824
53.8	Templeton	823	824
54.7	Reimerton	836	837
59.4	Red Bank Junction(IV)	850	851
$\begin{array}{c} 63.7 \\ 65.9 \end{array}$	Phillipsburg	854	855
68.5	Brady's Bend.	856	857
71.0	Catfish	858	859
72.6	Sarah Furnace	860.	861
74.0	Hillsville	864	865
78.1	Monterey	874	875
82.5	Parker(V)	į <b>i</b>	889
			~~ • • •

^{*}The figures in the second column are from our own levels as far as Kittanning. Above that point the profile levels have simply been raised one foot.

## ALLEGHENY VALLEY RAILBOAD-Continued.

Mile		Ab.	Ocean.
Miles fr. Pittsburg,		Profile Ele- vations	Corry to levels.
85.2	Foxburg	896	8
86.7	Fullerton		. "
89.0	Emlenton	904	Ct. 1
91.8	Dotters	914	915
96.7	Blacks	922	9, ,
198.6	Rockland	926	9
101.4	St. George	934	9.3.
103.8	Roberts Run		
106.7	Scrubgrass	944	9
112.7	Brandon		9-/1
115.5	Fosters		976
117.8	East Sandy		97.,
121.2	Cochran		952
123.1	Franklin $(\alpha)$		985
125.6	Prentice		
127.0	Reno	1008	***
131.0	South Oil City (b) (1009.27)	1008	
132.0	Oil City, Union Depot (1008.82)(VI. X. XII.)	• • • • • •	1005

- (a) See Franklin levels.
- (b) The exact figures for South Oil City by these levels would be 1,009.27, and for Union Depot, Oil City, 1,008.82. We adopt 1,008 instead of 1,009 for reasons stated in the foregoing discussion.

II.

## West Penn RR.

Copied from Allen's levels and corrected.

Miles from intersect'n,	-	Allen	Corrected
0 3 8 17	Blairsville Intersection (a). Blairsville, Market street station. Livermore. Saltzburg, Market street.	1011 945 891	1113.00

#### WEST PENN RR .- Continued.

Miles from inter-		Allen	Corrected
21 24 27 29	Fairbanks Coal RR. Connection.  Helma. Salina. North West Roaring Run. Apollo. Townsend's Summit. Grinder's Hill's Mills. A. V. RR. Crossing (b)(I)	933 1017 - 955 894 830 823 887 827 780 785	791.00
38 38 ¹ / ₂ 43 45 46 50 54 58 61 64	Freeport (depot) (111) Butler Junction (111) Sligo. Karn's. Natrona Tarentum. Bailey's Run. Springdale Harmersville Fairview. Ross. Sharpsburg, Main street.	775 768 768 757 753 749 743 741 745 739	772.00 769.00
66	Allegheny City, East Lane (c)	743	742.00 $738.75$ $745.26$

- (a) Junction with the P. RR.
- (b) This elevation (785') is probably a mistake, bench-mark 783.44 at this point having been taken instead of the crossing. If this supposition be correct the West Penn levels from the Junction to Allegheny City may be presumed to be over one foot too high, for we find them here 1.56' above correct Pittsburg datum and 1.60' above the same at Allegheny City. (See comparison of levels and Pittsburg levels.)
- (c) The elevations of East Lane crossing and P., Ft. W. & C. Junction in the second column were obtained by leveling from the Pittsburg Union Depot B. M., as shown in table of Pittsburg levels.

#### III.

## Butler Branch West Penn RR.

From our own levels.

Miles from intersection		Авоув освап
0.0 0.6 3.2 4.6 5.3 7.6 10.5 11.5	Freeport (depot) (II) Butler Junction (II) Buffalo Harbison's Monroe. Sandy Lick Station. Sarver's Saxonburg Station Delano. Dilk's.	1201 $1224$ $1307$
13.4 14.3	Summit Great Belt City Summit.	1260
$\frac{16.0}{21.0}$	Herman Butler (a)	1301

⁽a) Our line was not run above Herman Station. The elevation of Butler is supplied from the RR. profile, but probably is very near correct.

#### IV.

# Low Grade Division, A. V. RR.* Copied from Allen's levels and corrected.

Miles from Drift- wood		Profile elevat'ns	Corrected lovels above ocean
<u> </u>		ns	rels
0	Driftwood Junction	788	814
	Mix Run	848	874
7.1	Miller's	880	906
8.4	Dent's Run	898	924
	Enz	938	964
12.0	Grant	949	975
	Mount Pleasant.	973	999
	Devil's Elbow	993	1019
16.3	Benezette	1014	1040
	Meadic's Run	1073	1099
	Caledonia Tunnel	1122	1148
1	Slabtown Dam	1163	1189
	Hebner's Run	1245	1271
	Clear Run	1385	1411
	Slab Run	1381	1407
-47.4	Falls Creek	1381	1407
	Crooked Run	1378	1404
	Evergreen	1374	1400
-52.0	Maghee's	1361	1387
į.	Panther's Run	1362	1388
54.1	Reynoldsville	1351	1377
	Prior Run	1342	1368
	Prindible's	1335	1361
	M'Annutty	1335	1361
	Camp Run	1317	1343
60.7	Fuller's Mill	1301	1327
1	Wolf Run	1295	1321
`	Cable Run.	1285	1311
63.6	Iowa Mill	1273	1299
	Goose Neck	1256	1282
66.5	Bell's MillGarrison's Mill	1340 1235	$\frac{1366}{1261}$
69.4	Brookville.	1209	1235
00.1	Nickolson's Mill	1199	1225
1	Corder's Run	1200	1226
71.7	Puckerty Point.	1189	1215
•	Rattlesnake Run	1183	1209
	Baxter's Mill	1181	1207
	Heathville.	1137	1163
i	Motter's Run.	1124	1150

^{*}These levels were supposed to be based on P. RR. datum at Philadelphia, as given on Mr. Burgin's profile of the P. & E. R'y. According to this profile Driftwood is 788'+7'=795' above ocean. But we find this altogether too low, and are obliged to lift the whole line of levels 19' more, or 26' in all, above the original RR. profile, as given by Mr. Allen, to bring Red Bank. Junction up to the accepted level of the A. V. R'y at that point.

Low Grade Division, A. V. RR .- Continued.

Miles from Drift- wood		Profile elevat'ns,	Corrected levels
	Bear Tree Run	1107	1133
04 -	Maysville	1082	1108
84.5	Pine Run		1101
00.4	Millville		1093-
86.4	Indiantown Run	1063	1089
	Middle Run		1086
89.7	New Bethlehem		1080
09.1	Anthony's Neck		1051
95.0	Leatherwood	1001	1027
97.5	Rock Run	940	966
J1 .0	Buck Lick Run		939
	Lawsonham	893	919
	Fiddler's Run	889	915.
110.0	Red Bank Junction(I)	825	851

#### ν.

Parker & Karns City RR.

Copied from Mr. Allen's levels and corrected.

	Ab. datum,	Ab. ocean
Datum (a) Parker Junction (b)(I)		775.67 889.40
Datum (a)  Parker Junction (b)  Parker City  Stone House (c)  Martinsburg  Argyle  Petrolic	315.00 330.00 386.80	1069.00 1106.00, 1162.00
Petrolia Central Point Karns City	410.00	1177.00 1186.00 1206.00

(a) The datum of this road is 103.99' below the top of the freestone base of the toll house at the west end of the bridge; this was found to be 9.74' below the Parker depot of the A. V. RR. Parker Depot is 889.40' above ocean, consequently the Karns City RR. datum must be 889.40'—113.73'=775.67' above ocean.

- (b) With A. V. RR. east end of Parker bridge.
- (c) 315 in Mr. Allen's tables should have been 293 as the RR. profile shows.

#### VI.

## Oil Creek & Allegheny River RR.

The elevations in the first column were copied from the profile in the office of the company at Oil City, February, 1877, through the kindness of Mr. Frank M. Ashmead, Resident Engineer.

The datum is given as follows: "Elevation of track on Bridge east of Irvineton Station on P. & E. RR. above tide water at west end of Market street bridge, Philadelphia = 1,160".

To the profile elevations 13' have been added to raise them up to the corrected ocean level of Oil City and Irvineton as given in the second column. This lifts the Corry end of the road four feet too high to agree with our accepted elevation of that point, which is due no doubt to errors in the profile between Tryonville and Corry, as shown in the foregoing discussion of relative levels.

Miles from Ir- vineton		Profile elevat'ns	Авоче осеяп
2.6 4.1 6.6 8.9 11.1 14.8 20.1 23.3	Brokenstraw Bridge, Irvineton top of Track (a) (VIII) Irvineton Junction (b)	1157 1155 1143 1138 1130 1124 1118 1100 1086	1178- 1170 1168- 1156 1151 1143 1137 1131 1113 1099- 1092
26.2 28.1 29.6	Dawson's Jamison's Tionesta	1063	1076- 1074 1060-

OIL CREEK & ALLEGHENY RIVER RR .- Continued.

Miles from Ir-		Profile elevat'ns,	Above ocean
<u>: 7</u>			-
32.5 34.9 36.8	Hunter's Stewart's Run or Baum President	1035	1061 1047 1048 1046
-38.0	Eagle Rock Henry's Bend		1035
39.3 -41.3	Oleopolis		1032
43.2	Walnut Bend	TOTO	1023
46.5	Rockwood	1003	1016
50.2	Oil City(I. X.XII)	995	1008
52.7	M'Clintock, (Old Sta. $-1.048$ )		
53.4	Rouseville	1023	1036
-54.4	Rvnd Farm.	1020	1043
-55.6	Tarr Farm	1050	1063
56.1	Columbia		1067
57.6	Petroleum Centre	1076	1089 1086
58.1	Boyd Farm	1073	1099
59.1	Pioneer		1131
61.3	Shaffer	1118	1131
62.3	Miller Farm.		1194
67.2	Titusville(VII)		1252
71.4	Hydetown		1279
^	Gray's Mill Tryon ville Junction(VII)	1307	1320
75.9	Centreville	1283	1296
78.7 82.3	Glynden	1335	1348
85.4	Spartansburg	1442	1455
93.5	Corry, B. C. & P. Junction	1433	1446
94.3	Corry Depot(VIII. IX)		1433
94.4	Corry Crossing P. & E. and A. & G.W. RR., (d) (VIII.IX)	(1418)	(1431)

- (a) The levels of this road were based on 1160' as the elevation of the Brokenstraw Bridge above the P. R. R. datum at Philadelphia. No authority is given in the engineer's notes, and it appears to be a mistake, both as to the elevation and the datum from whence derived.
  - (b) On P. & E. profile=1158.80.
- (c) The point here referred to is on the O. C. & A. R. R. R. track, on the south side of the P. & E. depot, and is 1.91' lower than the P. & E. track.
- (d) Corry depot is given on the profile as 1420.23'. The crossing of the P. & E. and A. & G. W. R. R. is 2.29' lower, consequently the O. C. & A. R. elevation of the crossing would be 1418' as supplied. The adopted elevation of this point is 1427', and of Corry depot 1429'.

#### VII.

#### Union and Titusville RR.

Same authority and same correction as O. C. & A. R. Ry.

Distances.,		Profile elevat'ns	Corrected levels,
0	Titusville( $a$ )(VI)	1181	1194
8.7	$ \begin{array}{cccc} \text{Titusville}(a) & & & (\text{VI}) \\ \text{Tryonville Junction} & & & (\text{VI}) \\ \text{Nobles} & & & \end{array} $	1307	1320
10.5	Nobles	1285	1298
14.0	Riceville	1356	1369
16.1	Lincolnville	1369	1382
17.2	Lakeville	1399	1412
24.4	A. &. G. W. Crossing	1291	1304
24.8	Union City P. & E. Depot $(b)$ (VIII)	(1258)	(1271)
24.8	Union City P. & E. Junction	1257	1270
24.9	Union City A. & G. W. Depot $(c)$ (IX)	1288	1301

- (a) This road uses the O. C. & A. R. RR. track from Titusville to the Junction.
- (b) This elevation was supplied by our levels from the Junction. The adopted elevation is 1,270'.
  - (c) Adopted elevation, 1,299'.

#### VIII.

## Philadelphia & Erie RR.

The figures in the first column are copied from a profile published by Mr. J. F. Burgin, C. E., in 1862.

Datum "tide water at west end of Market Street Bridge over Schuylkill, Philadelphia." [An error.]

The elevations in the second column are from our own levels run from Lake Erie to Union City, in March, 1877. Beyond Union City we have continued our corrected elevations by raising the Burgin profile 11' at all points. This is required to bring the road up to the horizon of the levels carried up from Pittsburg, and seems to be warranted by the fact that the old

## 348 I.I. OIL WELL RECORDS. J. F. CARLL, 1877.

levels start 11' too low at the L. S. & M. S. crossing. These points are more fully explained in the discussion of relative levels.

Miles from Erie,		Profile elevations	Corrected eleva- tion ab. ocean
	Lake Erie	565	573
	Erie Freight Depot (a)	573	584
0	Erie Union Depot(XI)		686
7	L. S. & M. S. RR. Crossing(XI)	676	687
7	Belle Valley	994	1007
9	Langdons	1123	1137
13	Jacksons	1218	1229
19	Waterford	1181	1192
23	Le Bœuf	1205	1218
26	Union City(VII)	1259	1270
32	Concord	1372	1383
34	Lovells	1363	1374
36 }	Logan's Summit	1429	1440
361	B. C. & P. RR. Crossing.	· · · · ·	1440
37 ⁻ 37	Corry (VI. IX) A. & G. W. RR. Crossing (VI. IX)	1416	1429
31	A. & G. W. AR. Crossing (VI. IA)		1427
44	Columbus	1381	1399
50	Spring Creek.	1298	1392
$\frac{50}{54}$			$\frac{1309}{1247}$
5 <del>7</del>	Pittsfield	1203	1247 1214
01	Youngsville(VI)	1205	1170
_, 60	Tryington Danot (b)	• • • • • •	1170
,50	Irvineton Depot (b)	1162	1173
66	Warren	1189	1200
		1100	1200

⁽a) See preceding discussion of levels.

⁽b) This Depot is 1.91' higher than the O. C. & A. RR. Depot track.

## P. & E. RR. Levels

From Erie to Union City, as run by John H. Carll and Arthur Hale, March, 1877.

Z		1 ~
Miles from		Above ocean
Š		1 9 .
Ŧ		ò
g		9
		8
E		100
Erie,		
0	Erie Union Depot	686
1.0	L. S. & M. S. Crossing	686.72
3.0	Opp. Mile Post.	759.64
4.0	do do	828.82
4.2	dodo B. M. on north end of E. wall of Culvert at Road Crossing	839.27
5.0	Opp. Mile Post	901.60
6.0	$.d\bar{o}$	978.97
6.7	doBelle Valley Sta	1007.19
7.0	do. Mile Post.	1007.15
8.0	dodo	1076.78
8.9	do. Langdons Sta	1136.85
9.0	doMile Post	1135.69
10.0	dodo	1155.26
11.0	dodo	1186.81
12.0	dodo	1218.37
12.4	Jackson Sta. Road Crossing	1229.46
13.0	Opp. Mile Post	1224.50
14.0	dodo	1219.97
14.7	B. M., east abut., north end, inside corner, Bridge No. 8	1214.54
15.0	Opp. Mile Post	1212.58
16.0	. do do	1209.11
17.0	dodo	1206.31
$17.4 \\ 18.0$	B. M. on east abut., north end, inside corner, Bridge No. 13,	1206.84 1201.31
18.0	Opp. Mile Post	1192.66
18.6	B. M., east wall, north end, inside corner, Culvert	1190.60
19.0	Opp. Mile Post.	1191.92
20.0	do do.	1200.88
21.0	.dodo	1221.13
22.0	.dodo	1218.14
22.9	Le Bœuf Road Crossing.	1217.08
23.0	Opp. Mile Post.	1212.14
$\frac{23.4}{23.4}$	Opp. Mile Post.  B. M., E. abut., lower end, outside corner, Bridge No. 18	1211.27
23.9	dodododoNo.—	1213,64
24.0	Opp. Mile Post.	1218.51
24.9	Opp. Mile Post.  B. M., E. abut., lower end, inside corner, Bridge No. 21	1235.68
25.0	Opp. Mile Post.	1238.80
25.9	B. M., E. abut., lower end, outside corner, Bridge No	1260.24
$26 \ 0$	B. M., E. abut., lower end, outside corner, Bridge No. — Opp. Mile Post.	1263.53
26.3	.doUnion City Depot	1269.63

## IX,

## Atlantic & Great Western RR.

Copied for the Survey by Mr. C. D. Allis, Assistant Engineer, from the railway profile.

h-1		- ▶	A
man man		8	1 8
na na		₹ ₹	4
p s			0
ន្ទា		, E	1 8
nanca		Aboye Lake Erie	Above ocean
: =		3	5
: છુ		F.	
: 12	· ·	10	) :
<u></u>			
	C. C. C. T. C.	200	1909
0	Salamanca, Center Hemlock St., (a)(XVIII)	820	1393.
	Bucktooth	803	1376
7	Red House	780	1353
12	Steamburg	831	1404
18	Randolph	745	1318
	Waterboro'	703	1276
25	Kennedy	691	1264
	Poland	696	1269
	Levant D., A. V. & P. RR. Crossing	694	1267
34	Jamestown	748	1321
41	Ash ville	783	1356
$\hat{45}$	Watts Flats	883	1456
48	Grant	864	1437
30	N. Y. & Penn'a State Line	895	1468
51	Bear Lake	977	1550
58	Columbus	854	1427
ĐÒ	P. & E. RR. Crossing, (b)(VI. VIII)	856	1429
61	Corry, (c)(VI. VIII)	858	1431
01	B. C. & P. RR. Crossing	870	1443.
	Concord	788	1361
72	Union City, (d)(VII)	728	1301
79	Mill Village	643	1216
85	Millers	596	1169
88	Cambridge	590	1163
92	Venango	590	1163
96	Saegertown	543	1116
102	Meadville(X)	507	1080»
	Junction Franklin Branch,(X)	501	1074
110	Geneva	496	1069
116	Evansburg	711	1284
121	Adamsville.	575	1148
	Sugar Grove	467	1040
	Sugar Grove	409	982
129	Greenville	411	984
131	Shenango.	363	936
101	E. & P. RR. Crossing, $(f)$ (XIII)	363	936
135	Transfer.	420	993
100	Crawfords	320	893
141	Orangeville	372	945
777	Penn'a & Ohio State Line	372	945
145	Durchill	471	1044
TAU	Burghill. Johnson's Summit	553	1126
154		426	999
162	Baconsburg	327	900
165	Warren		900° 895
709	Leavittsburg	322	
	Crossing Mahoning Division	334	907

- (a) See Review (F.) A. & G. W. levels.
- (b) Adopted elevation 1,427.
- (c) Adopted elevation 1,429.
- (d) Adopted elevation 1,299.
- (e) Near Salem, adopted elevation 984.
- (f) Clarksville Crossing, adopted elevation 938.

## Mahoning Division A. & G. W. RR.

Miles fr. Leavitts- burg		Above Lake Erie	Above осеяп
0	Leavittsburg	322	895
	Crossing Main Line	334	907
.9	Phalanx	345	918
	Mahoning.	370	943
13	Garrettsviile	446	1019
19	Mantua	538	1111
26	Aurora	531	1104
	Pond.	470	1043
34	Solon	468	1041
	Randal	473	1046
44	Newburg,	240	813
	C. & P. crossing (a). Cleveland	175	748
49	Cleveland	24	597
	Lake Erie, surface of water	00	573

(a) Mr. I. Linton, Chief Engineer of the C. & P. RR., has kindly given us the elevation of this point by the C. & P. profile. "It is 173.64' above the surface of Lake Erie; water level of 1848."

#### X.

## Franklin Branch A. & G. W. RR.

Same authority as A. & G. W. main line.

Miles from Mead- ville		Above Lake Erie	Above ocean
0	Meadville(IX)	507	1080
3	Junction(IX)	501	1074
6	Shaw's Landing		1092
11	Cochranton	491	1064
$\tilde{1}\tilde{4}$	Carlton	474	1047
19	Utica	462	1035
24	Sugar Creek	441	1014
28	Franklin $(a)$	414	987
33	Reno	438	1011
36	Oil City, west side	433	1006
	Oil City, Union Depot, (b)(I, VI, XII)	1	(1007)

- (a) See Franklin levels.
- (b) Supplied; see Oil City levels. Adopted elevation, 1,008'.

#### XI.

## Lake Shore and Michigan Southern RR.

## Copied from Allen's levels.

Miles from Dun- kirk	•	Above Lake Erie	Авоче осеап
Q	Dunkirk(XVIII)	25	598
4	Morian's	53	626
9	Brocton.	151	724
	Portland	121 I	694
17	Westnerd	124	697
	Ripley Crossing	163	736
25	Ripley Crossing.	177	750
28	State Line	212	785
33	North East	231	804
00 (		201	OU'£

LAKE SHORE AND MICHIGAN SOUTHERN RR .- Continued.

Miles from Dunkirk,		Ab'e Lake Erie	Ab. ocean,
37	Moorhead	195	768
40	Harbor Creek	157	730
44	Wesleyville	124	697
	P, & E. RR. Crossing (a). (VIII)	(114)	(687)
48	Erie, Union Depot(VIII)	`113	`686
56	Swanville	162	735
58	Fairview	162	735
63	Girard	144	717
6 <b>4</b>	E. & P. RR. Junction $(b)$ (XIII)	(126)	(699)
68	Springfield	` 90′	`663
75	Conneaut.	78	651
	Amboy	108	681
83	Kingsville	98	671
88	Ashtabula(XII)	75	648

- (a) See Erie levels.
- (b) Girard Station, on the L. S. & M. S., is given as 143.72'. J. H. Carll found the E. & P. Junction to be 18.17' below the station, making the Junction 143.72—18.17=125.55'.

#### XII.

## Franklin Branch L. S. & M. S. RR.

Same authority as main line.

Miles from Oil City,	·	Ab'e Lake Erie	Ab. ocean,
0 1.1 4.7 7.2 9.3 15.8 18.1 22.3 29.8 31.3 35.5 38.8	Oil City, Union Depot (a)	422 444 592 511 565 592 598 626 591	(1011) 1010 1017 995 1017 1165 1084 1138 1165 1171 1199 1164 1070
44.3 46.1	Salem	425	998 987

## FRANKLIN BRANCH L. S. M. S. RR .- Continued.

Miles from Oil City		Above Lake Erie	Above ocean
51.1 54.2 57.2 62.8	Jamestown Turner Simon Andover	417 487 484 522	990- 1060- 1057 1095
66.6 70.4 76.4	Tieon. Dorset Jefferson	445 368	1018 941
79.8 82.4 87.2	Griggs. Plymouth(XI)	281 75	854 648-

- (a) See Oil City levels. Adopted elevation, 1,008'.
- (b) See Franklin levels. Adopted elevation, 1,014'.
- (c) Adopted elevation, 1,168'.
- (d) Near Salem. Adopted elevation, 984'.

Wherever checked this road appears to be about 3' too high.

#### XIII.

## Erie & Pittsburg RR.

## Copied from Allen's levels.

Miles from New Castle		Above Lake Erie	Above ocean
0	New Castle (a)	236	809
อั	Harbor Bridge	243	816
	Nashua	248	821
11	Pulaski	253	826
15	Middlesex	260	833
18	Wheatland	268	841
20	Sharon	280	853
23	Sharpsville	375	948
27	Clarksville	321	894
30	Transfer	417	990
	A. & G. W. Crossing (b)(IX)	357	930
34	Shenango	368	941
35	Greenville	388	961
41	Jamestown (c)	406	979≁
	Rasson's	538	1111
51	Espyville	515	1088%

ERIE & PITTSBURG RR .- Continued.

Miles from New Castle		Above Lake Erie	Above occan
55	Linesville	460	1033
59	Summit.	586	1159
63	Conneautville.	493	1066
66	Spring. Albion. Crosses	388	961
72		284	857
78		192	765
82	Junction L. S. & M. S. RR. (d)(XI)	124	697

- (a) 803 on N. C. & B. V. Perhaps not the same points.
- (b) Adopted elevation 938'. See review F.
- (c) 990 on L. S. & M. S., and L. S. & M. S. depot is really lower than the E. & P. depot.
  - (d) Two feet too low. See note b XI.

This whole list of levels appears very unreliable.

#### XIV.

## New Castle & Franklin RR.

Copied from Allen's Levels.

	Above Lake Erie	Above ocean
New Castle $(a)$ $(XV)$ Junction $(XV)$	230 221	803 794
East Brook.	333	906
Gra ham's	334	907
Wilmington	355	928
Neshannock Falls	419	992
Volante	462	1035
Leesburg	472	1045
Nelson.	487	1060
Hope Mills	534	1107
Mercer	524	1097
Turner's	571	1144
Jackson Centre	684	1257
Garvin	754	1327
Summit	815	1388
Coulson.	704	1277
$\underline{\text{Stoneboro}(\underline{b})}(\underline{\mathbf{XII}})$	598	1171

(a) This elevation is based on 746' for Union Depot, Pittsburg, consequently all the following levels are one foot too high to agree with our lines run from the Pittsburg datum of 745'.

(b) Adopted elevation 1168. See D, note (a).

#### XV.

## New Castle & Beaver Valley RR.

Copied from Allen's Levels.

	Above Lake Erie	Above ocean
Homewood (a) XVI	377	956
Clinton	327	900
Thompson's	287	860
Wampum	228	801
Newport	239	812
Moravia	233	806
Lawrence Junction	201	774
Mahonington	216	789
Junction New Castle & Franklin RR(XIV)	221	794
New Castle(XIV)	230	803

⁽a) This is the P., F. W. & C. elevation of Homewood, which is based on 746' for Union Depot, Pittsburg, instead of 745'. All the stations in this table should be lowered one foot to make them agree with our levels.

#### XVI.

## Pittsburg, Fort Wayne & Chicago RR. Copied from Allen's Levels.

Miles from Pitts- burg		Above Lake Erie	Аьочо освап
0	Pittsburg Union Depot (a)	173	746
_	Pittsburg Union Depot (a)		(739)
1	Allegheny	166	` 739
	Outer Depot.	192	765
	Wood's Run	159	732
	Jack's Run	156	729
***	Bellevue	156	729
7	Emsworth	153	726
8	Dixmont		723
•	Glendale	149	722
9	Haysville	149	$722 \\ 737$
12	Sewickley	164	737
10	Edgeworth	153	716
13	Leetsdale	143	716
15	Fair Oaks	143	716
19	Economy	143 143	716
18	Economy Switch	138	711
	Baden	138	711
$\begin{array}{c} 21 \\ 22 \end{array}$	Remington	131	704
2£	Freedom	134	707
26	Rochester		751
29	New Brighton Beaver Falls	199	772
AU		293	866
	SullivanWallace Run	323	896
30	Homewood (XV)		950
- 00	Homewood	011	

⁽a) 745' is our adopted elevation of this point. These levels should therefore all be dropped one foot to make them agree with our lines.

⁽b) See Pittsburg levéls.

#### XVII.

Buffalo, New York & Philadelphia RR. Copied from Allen's Levels.

Miles from Em- porium		Above Lake Erie	Аbоуе осеап
0	Emporium	448	1021
6	Shippen	630	1203
14	Keating Summit	1305	1878
17	Liberty		1643
24	Port Allegheny		1479
32	Larabee's		1478
38	Eldred	867	1440
42	State Line	866	1439
45	Portville		1435
52		880	1453
58	Hindsdale Ischua	965	1538
64 ) 71	Franklinville.	1017	1590
78	Machias	1080	1653
82	Yorkshire.		1455
85	Arcade	881	1454
92	Protection	807	1380
95	Holland	600	1173
99	South Wales.	414	987
104	Aurora	348	921
106	Jamieson	317	890
108	Elma	250	823
110	Spring Brook.	180	753
114	Ebenezer	63	636
121	Buffalo	11	584

⁽a) This point is said to be about the same elevation as the Olean Station on the Erie RR. Adopted elevation 1436'. See A.

#### XVIII.

N. Y. & Erie RR.

## Copied from Allen's levels.

Distances		Above ocean,
0	Dunkirk (a)(XI)	600
8	Forestville.	883
12	Smith's Mills	1010
	Persia	1390
31	Cattaraugus	1411
38	Little Valley	1594
46	Salamanca(b) (IX)	1384
49	Great Valley	1393
52	Carrollton	1399
		(1400) $1415$
61		1422
65	Allegheny(XVII)	1438
CO	Hindsdale	1501
	White House.	1514
77	Cuba	1542
	Cuba Summit	1698
86	Friendship	1539
90	Belvidere	1384
94	Philipsville	1390
	Scio.	1458
102	Genessee	1511
110	Andover	$1676 \\ 1783$
128	Tip Top Summit	1161
132	Hornellsville Canisteo	1134
154	Adrian	1112
	Santees.	1067
	Cameron	1056
149	Cameron Mills	1029
157	Rathboneville	1015
162	Addison's	993
	Erwin's.	983
171	Painted Post	947
173	Corning	942 863
190	Elmira	<del></del>

⁽a) The L. S. & M. S., N. Y. & Erie and D., A. V. & P. railroads all use the same depot at this point. Levels were run from it to the lake by J. H. Carll, April 4, 1877, with the following results. Top of track at west end of depot, 25.63' above surface of lake. D., A. V. & P. Junction with L. S. & M. S. (near east end of depot) 26.16' above lake. [598' adopted.]

⁽b) See review (F) A. & G. W. levels; adopted elevation of present depot, 1,393'.

Elevation above Ocean of a number of points on the Titusville and Pithole Plank Road, Venango county. Centre of road when not otherwise mentioned. From our Pleasantville and Church Run line of 1874. Opposite office of Hinkley Refinery, 1196 S. E. cor. of porch of Johnston House, E. Titusville, 1192 Crossing of D., A. V. and P. RR., top of rail, 1184 Pine Creek Bridge, top of stringer, E. end, 1186 1174 " surface of water (ordinary), -Intersection of Plumer road, - -1237Opp. large pine, top of "1st M'Gee hill," 1308 Opp. spring on M'Gee hill slope, 1397 Crown of M'Gee hill. -1511 Culvert over head of M'Gee run, 15251576Intersection of Shamburg road, Intersection of road in front of J. Y. Siggins', 1647 Highest point on Siggins' hill, 1694 B. M. on oak near Parshall's corners, 1674 Highest point of hill opposite M. C. Beebe's, -1686 Culvert over branch of W. Pithole, Pleasantville, 1620 Top sandstone water table, N.W. cor. Pleasantville Bank, 1635 B. M. on foundation of tower of Presbyterian Church, 1656 1654 Intersection of Dunham road, -Intersection of Clark Farm road. 1671Crown of hill S. E. of toll house,  $1659^{\circ}$ Top of Tyrrell hill, - - - -1653 B. M. rock in front of Tyrrell Farm school house, 1532 Bridge over Dunham run, - - -1518 B. M. on rock corner F. and Warren pike, opposite Farmer's Hotel, - -1523Intersection of Tionesta road, -1530 South line of Bean Farm, -1506 Surface of water in Dunham run, 1406B. M. on rock S. end of Haworth's mill, 1391 Bridge over Pithole creek, 1386Surface of water, Pithole creek, 1380 B. M. on rock by old road leading to Cashup, 1522 Intersection of Holmes' Avenue to Cashup, 1583 Crown of Ruggs' hill, 1587

CHAPTER XXVIII.	LI. 361
West entrance to Cashup,	1501
B. M. on rock near Peck well, Dawson Centre, -	1360
Bridge over Pithole creek, Dawson Centre,	1359
Surface of water, Pithole creek, Dawson Centre, -	1351
B. M. on large rock S. of road opp. Minor's W. well,	1397
Square stone monument near the old Homestead well,	
and on a level with well mouth, said to be on town- ship line,	1340
Depot of Pithole and Oleopolis RR,	1320

## INDEX

To Report of Progress I.I. Oil Well Records. J. F. Carll.

Note.—Wells mentioned in the volume are referred to in this index both by their running number and by the page on which it is found. If any clerical or typographical error has been made in the one it will be discovered by the other.

	PAGE.
"A" well, No. 15, Economy (993)	180
Abbe and Bailey (95, 96)	<b>4</b> 9, 50
Ætna (113)	57
Adams and Friday (1480)	305
Aikins; see Grant (1635).	
Alcorn farm	62
Allegheny City depot level, wrong	342
Allegheny River 61 to 64, 81, 84, 120, 156, 157, 177, 202,	203, 237
Allegheny River RR. levels	320
Allegheny Run	7
Allegheny township, Venango Co	185
Allegheny township, Butler Co	240, 298
Allegheny Valley RR., 5; levels	329, 340
Allen (Charles)	338
Allen Wright, see Wright (718).	
Allender Run, Venango Co	77, 156
Allender Run No. 3. (930)	156
Allshouse and Cuner (1597)	309
Allshouse and Guffey (1581)	308
Amazon, No. 7 (897, 898)	143. 1 <del>44</del>
American Philosophical Society	87
Anchor Farm	237
Anderson (1321)	301
Anderson Petroleum Co. farm	63
Anderson (G. K.)	7.48.57
Anderson (G. K.) No. 35, (408)	76
Anderson (G. K.) lease No. 21 (83)	46
Anderson (G. K.) lease No. 5 (84)	46
Anderson (G. K.) lease No. 33 (85)	46
Anderson (G. K.) No. 134, Pet. Centre	7
	76
Anderson (G. K.) No. — (416)	85
Andrews (F.) lease 25 (669)	76
[I.I.—363]	

	PAGE
Andrews (W.) (624,625)	. 83
Andrews and Stuart No. 1 (70)	. 40
Angel No. 6; No. 9; (1413, 1414)	304
Angel Gas Well (1463)	305
Antwerp Pipe Co. (1624)	. 809
Argyle Wells; "Argyle" (1263)	299
Armor (1520)	306
Armstead No. 1 (1137); -(1209)	, 243, 298
Armstrong county	277
Armstrong farm 20, 31,	74,75,84
Armstrong (651)	84
Arnold's Station level	329
Arnold (G. W.)	35
Arnold and Lockwood	36
Arrowsmith (1140; 1252)	245: 299
Ash farm near Enterprise	76
Ash (423)	76
Ashbaugh (1539)	307
Ashbaugh (1543)	307
Ashland township, Clarion Co	230
Ashmead (F. M., Civil Engineer).	
Ashtabula level	323 324
ASICADUIA IEVEL	220, 251
Atlantic & G. W. RR. levels discussed	66,68
Atlantic & G. W. Petro. Co	195
Atlas (1039)—Atlas Oil Co. tract	
Atkinson farm	30, 88, 18 TT
Augusta (428)	77
Autumn (953)	166
Avery (685)	85
Axley (T. H.) farm	309
Babbitt farm—Well No. 1 (899)	.30; 144
Babcock (102; 789)	52; 122
Bachell (J. B.)	245
Bagley, lease 26, (668)	85
Baker (695).—[see Ramsey.]	85
Baldey (1108)	227
Baldy (1569)	308
Baldwin & Porter No. 1 (28)	20
Ball farm 130,	142, 143
Ball Farm, Nos. 1, 4, 5 (893, 894, 895)	142, 143
Balliot and Lee, No. 2 (1627)	309
Banks (M.) farm	300
Banks, Nos. 1,2 (1295, 1296)	300
Banks and Gailey (1302)	300
Barber (M. P.)	28
Barnhart (D) farm	
Barnhardt (D) No. 2 (1429)	304
Barnhart (F.) (1435)	304
Barnhart (G.) farm	302
Barnhart (J.) (1434)	304
Rarnsdall farm on Church Run	79.171
DMI II SUGII IMIIII OII UII UII UII INUII	19.171

	PAGE.
Barnes (W. A.)	11
Barton Well	268
Bates (Norman R.)	24, 27, 28
Bates No. 1, (43); No. 2 (660)	27:84
Bates Petrolem Co. tract;—farm	33; 75
Bates Pet. Co. No. 3 (44)	28; 84
Baum (W. T.)	217, 222
Baum farm	188, 216
Baum (lower) tract	217
Baum, No. 1, (55); also (1641)	33: 310
Beach farm on Church run	79
Beale (J. G.)	277
Beal's (S.) farm.	309
Beam Brothers. Well (18)	15
Beam, No. 3, (313)	74
Bean farm; level	
Beatty farm	
Beaufort (338)	42,182 74
Beaver County	279
Beaver township, Clarion Co	
Boarman (Divillin)	
Beckman (Phillip)	42
Beebe (M. C.)	362
Beer's office	85
Bend farm	303
Benedict Estate; farm	
Benedict & Brown farm	79
Benedict's (Jos.) lot	17
Benedict (22)	17
Benedict Estate No. 1 (130)	64
Benedict (466)	79
Benedict and Sons (468,469)	79
Benedict Gas Well (645)	84
Bennehoff farm	
Bennett (Ed.) (1141)	245
Bennett (Ed.) Nos. 1 and 2 (1239, 1240)	299
Bennett No. 1, Fletcher farm (1253)	299
Bennett (1427)	30 <b>4</b>
Bennett's Branch RR. levels discussed	235, 318
Benson tract; Benson No. 1 (535)	82
Berger, see Reis.	
Berlin Gas Well (1639, 1640)	310
Best (J.) farm	309
Big Medicine (1363)	302
Billy Patterson (1248)	299
Bingham farm	307
Black farm	310
Black (Jacob) farm	232
Black (39)	25
Black farm (1235 to 1238)	298
Black (1636)	310
Black Flor (308)	74

#### INDEX.

Black Maria (1482)	FAGE.
Black Maria (1402)	305
Blackstone (H.)	
Blakeslee (L. C.)	215 13
Blakesley (12)	
Blanchard (432)	77
Blaney (J.) farm	
Bleakley (J.) farm	202
Blocher (793)	122
Blood farm	56
Bloomfield township, Crawford Co	
Blue Factory (1440)	304
Bly and Rowley No. 2 (1265)	299
Blyson Run, Clarion Co	232
Binkerd (J. B.) farm	256,257
Bishop (80)	45
Bogue Hill farm	85
Bogue Farm Well (691)	85
Bonanza (1523)	306
Bonsail & Co. see Foster (1075).	
Bonsall (Lewis) & Co	213, 215
Bonta and Hawes No. 5 (3)	10
Booth (1230)	298
Boss (1159); Boss (1392)	
Bott Bros. No. —, (1412)	304
Boulton (105)	
Bowers farm: well (1611)	309
Boyd farm	000, 000·
Boyer and Lufkins (452).	79
Porlo Nor 1 9 9 4 (1990 to 1999)	
Boyle, Nos. 1, 2, 3, 4 (1380 to 1383)	303
Bradford Branch RR. levels, see accepted elevations	335
Bradley, see Hess.	230
Bradley No. —, No. —, (1631, 1632)	310
Brady's Bend; township Allegheny Co	
Brady's Bend datum level; levels	
Brady's Bend Iron Co. Nos. 4,5 (1165, 1166)	258
Brady's Bend Iron Co. Nos. 4, 5, 12 (1397 to 1399)	303
Brady (1564)	308
Branch (339)	74
Brawley No. 1 (1142); No. 1 (1251)	
Brawley and Overy (1884)	301
Brevort Petroleum Co	86
Brevort, Nos. 3, 6, 20, 22, 30 (700 to 704)	86
Briar Hill, No. 1, (529)	81
Bridgeport Crossing level	327
Brockton level	322.
Brokenstraw Creek—Warren County	196
Brokenstraw Bridge level, wrong	347
Bronson tract;—Bronson (A. H.)	
Bronson, Nos. 2, 4, 5, 6, 7, 8, 10 (409 to 505)	80.
Bronson (Phoenix) No. 6; and D, (658, 659)	84

## INDEX.

T . O (000)	PAGE.
Bronson No. 2, (666)	85
Bronson, see Cashup (972).	
Brooklyn (349)	75
Brough Farm Well (1058)	206
Brown (A. W.) farm; lot	
Brown (A. W. & J. F.) tract, Cashup	80
Brown lease, Cashup	175
Brown Bros. tract; farm	
Brown, Byers & Co	19
Brown, Fertig & Hammond tract	31
Brown and House farm; tract	3; 14,74
Brown (J. B.)	
Brown (J. C.) heirs, farm	302
Brown (S. Q.)	3, 197
Brown (S. Q.) & Co	<b>75</b> ⋅
Brown (S. Q.) & Porter farm	22
Brown (S. Q.) see Benedict.	$79^{\circ}$
Brown (W.) farm	302
Brown, see Reis;—see Holmes	174
Brown & Warner (51)	. 31
Brown (Jack) No. 1, (66)	38
Brown, Nos. 1,2 (399,400)	76
Brown (B. F.) Old, No. 31 (672)	85
Brown (J. E.) (1205)	298
Brown and Riss (1450)	304
Brown & Co (1451)	304
Brownson (Marcus) (1426)	304
Brownson and Harrington (1507, 1508, 1509)	305, 306
Brownhelm township, Loraine Co., Ohio	282
Brummagen farm	85
Brundred (W. J.)	256, 257
Brush Run, branch of Clarion River	235, 236
Bryan (1125)	237
Buchanan farm 58,60	), 86, 191
Buckhorn Run, No. 6 (935)	158
Buckhorn, Nos. 1, 2, 3, 4 (563 to 566)	82
Buffalo Co.'s wells	215
Buffalo No. 1 (41)	26
Buffalo Creek at Erie—level	319
Buffalo, Corry & Pittsburgh, RR. levels	322
Buffalo, New York & Erie RR. levels	318
Buffalo, New York & Philadelphia RR. levels corrected	358
Bulger (1514); J. Graham tract (1519)	306
Bull Run, Venango county	3,42,76
Bullion Run, Venango county	219,310
Bullion Run (1093)	219
Bunker Hill lot, Venango Co	78
Bunker Hill (944)	161
Bunker Hill, East and West Wells (436, 437)	78
Burchfield, see Iron City.	
Burchfield No. — (1501)	305

	PAGE.
Burchfield (1521)	306
Burgin's RR. profile levels discussed	816, 321
Burns Gas Well (1526)	806
Burrill Oil Co. (1195)	281
Burrows, see Burtis	146
Burtis, Hart and Burrows tract	146
Burtis Well, see Morey (882).	
Burzer, see Harley (1553).	
Busted Ring (1483)	<b>3</b> 05
Butler Branch West Penn RR., levels, table	842
Butler county; levels, table	298 : 844
Butler (Captn.) Nos. 2, 4, 6, 8 (581 to 584)	83
Butler No. 1 (1241)	299
Byer and Satterfield (287)	73
Byles farm	75
Byron (C. P.)	10
Byron Mitchell No. 1 (111)	<b>6</b> 6
Caden farm	<b>\$</b> 07
Cadwallader and Morse tract	67
Cadwell (757).	112
Cady No. 1 (340)	74
Cain (Mr.)	270
Calamity (1603)	<b>3</b> 09
Caldwell farm	
Caldwell (F.) No. 4, lease No. 12 (949)	
Caldwell (F.) well lease 18 (950)	165
Caldwell & Emory (1475)	165
Company see Christian (1909)	<b>8</b> 05
Cameron, see Christian (1292)	800
Camp Ridge farm, Clarion co	<b>23</b> 0
Camp, Nos, -, 69 (?) (706,707,708)	86
Campbell Wells.	299
Campbell (A. L.) farm.	246
Campbell (A. L.) No. 3, — No. — (1268, 1269)	299
Campbell (G. R.) farm.	802
Campbell (J.) farm	<b>24</b> 8
Campbell (J. B.) farm	<b>304</b>
Campbell (J. P.) farm	<b>304</b>
Campbell, (R. D.) farm	299
Campbell, (Rob.) (1262)	299
Canfield tract	9
Captain Jack (1445)	<b>8</b> 04
Carbon Centre Wells	306
Card larm; well No 2 (1184)	273
Carii (J. H.)	329, 330
Oather lath	303
Carroll (300)	75
Carrotton township, Cattarangus Co., N. V	272
casey (Ed.)	243
oustrup 10 v cl	900
Cashup; Cashup Hill; wells	504 178 175
Cashup, Bronson wells Nos. 1 to 8 (972 to 980)	140

	PAGE.
Cataract, No. 1 (1138)	243
Cattaraugus Co., N. Y.; School House	81: 272
Cattasauque (1040)	195
Central Petroleum Company	
Central Petroleum Company No. 1, lease 134,(89)	48
Central Petroleum Company No. 1, lease 305, (90)	48
Central Petroleum Company No. 1, lease 306, (91)	48
Central Petroleum Company No. 380, (418)	76
Centre (992)	179
Chambers (1540)	307
Chambers, Nos. —, —, (1619, 1620)	309
Champion (J. C.); well No. 2, (121)	27:60
Champion No. 2. Rouseville.	7
Chance (H. M.)	296
Chandler (Jos.)	43
Chapin	165
Chase and Collins (512, 513)	80
Chatfield and Tomlinson, No. 1, (71)	41
Chattle (T. S.)	24
Chautauqua county, N. Y.	273
Cherry Run	
Cherry Run (Upper)	41, 160
Cherry Run Petroleum Company	85
Cherry Run Well at the bridge (916)	151
Cherry Tree Run; well (1433)	
Chick, Nos. 1, 2, 3 (743, 744, 745)	105
Childrens No. 1 (50)	31
Christian & Cameron (1292)	300
Church (1606)	309
Church Run, Crawford county 66 to 79; 168 to 13	
Church Run Valley.	79
Church Run Flowing Water well (444)	79
Clapp farm	61, 183
Clapp farm, Nos. 1, 3, 8, 15 to 18 (1005 to 1011)	184
Clapp farm, Nos. 31 to 35, 43, 50, 52, 53 (1012 to 1021)	184
Clapp (E. E.) farm	83
Clapp (J) farm. Wells (601 to 605)	83
Clapp wells, Nos. 1, 3, 9, 10, 16, 23, 24, 33, 34, 35, 36, 43, 50, 51, 52, 53 (585 to	
600)	83
Clarksville Crossing RR. level	326
Clarion River; mouth	236, 241
	24; 362
Clark (A) farm. Wells 682, 684	85
Clark (C) farm	
Clark (C) Nos. 1,2,4,13 (679,680,678,681)	85
Clark (D. W.) lease 126 (614)	83
Clark (N. Y. & A.) No. 3 (630)	84
Clark & Alien (309)	74
Clark No. 1, (370)	75
Clearfield township, Butler county	
Clearfield (1206)	298
24T_T_	

	PAGE.
Cleminger & Maxwell (1314)	108
Cliff (1124)	237
Clifton No. 1 (755)	112
Clifford (1217)	298
Clinton township, Venango county	219,310
Clinton township, Butler county	270
Clinton Oil Co	42
Clymer Village, N. Y	273
Coast Survey of the U. S	87
Cochran (710)	86
Cochran farm	200, 203
Collins, Pratt & Sumner (367)	75
Collins No. 2, lease 236 (618)	83
Collins "Turkey," lease 236 (619)	83
Collins & Perry, Nos. 1, 2, 5 (663, 664, 665)	85
Collins Bros. Nos. 7, 17, 18 (341, 306, 307)	74
Collins No. 5 (1053)	204
Collins (Tom.) (1456)	30 <del>4</del>
Colorado district, Warren county 81,82,	104, 184
Colorado Oil Co.'s wells	88 to 103
Colorado (Lower)	81
Colorado Nos. 1, 2, 3 (720, 721, 722)	88,90
Colorado No. 3 (536)	82
Colorado Nos. 4 to 6 (723 to 725)	91,92
	93 to 95
Colorado No. 9 (7) (538)	82
Colorado Nos. 10 to 12 (729 to 731)	96 to 97
Colorado No. 12 (532)	82
Colorado Nos. 13 to 21 (732 to 740)	8 to 103
Colorado Nos. —, — (534,537)	82
Columbia Oil Co.'s Story Farm	52, 53, 54
Columbia Oil Co	123
Columbia farm	121
Columbia wells Nos. 58, 59; 61, 62; 64; 66, 69, 70, 71, 72, 73, 74; 77, 78; 80,	
81, 82; 85, 86, 87; 89, 90, 91; 94; 96, 97; 99, 100, 101; 103 regularly on up	
to 139 (794 to 859=66 wells). 122,	123, 124
Columbia Oil Co., Sutton farm (1347, 1348)	302
Columbia Oil Co., Reddick farm (1127 to 1130)	238, 239
Columbia Hill, Darling, (1220 to 1224)	298
Columbia Nos. 2,3 (1225,1226)	298
Comer (289)	73
Comey and Andrews No. 1 (25)	19
Concord township, Butler county 247, 248,	301, 302
Concordia (54)	32
Conkle (F. A.)	270,271
Conkle (1484) see Hart.	,
Connelly farm	15,74
Constable No. 1 (1367)	302
Contest (1577)	308
Copeland Reserve (883) see Morey.	
Coquette (410)	76

	PAGE.
Cornplanter township, Venango county	191
Cornwall No. 1 (1246)	299
Corry datum level	26, 328
Corry RR. Crossing level	
Cotter farm.	196
Coulter farm	219
Courts and Andrews (99)	51
Cow Run	42
Craft lower and upper well (951,952)	166
Craig farm. Well No. 12 (1057)	206
Cranberry township, Venango county 2	-
Crawford farm	303
Crawford & Co.'s (1104)	224
Crawford (W) farm,	254
Critchlow (1131; 1214)	
Cropp farm	309
Crisswell City, Armstrong county	
Crisswell (Mr.)	253
Crocker (17)	15
Crook (443)	79
Crosley (425)	77
Croutz and Roy No. 3 (683)	85
Cummings No. 1 (561); (1152); (1393)	
Cummings No. 3 (562)	82
Cummings, see Hunter	54, 255
Cuner, see Alishouse (1597).	
Curtin Oil Co.'s tract	60
Cushing (Major)	114
Cushing & Grandin, Nos. 2, 6, 8, 9 (576, 571, 574, 573)	82
D well, see Triumph (998)	
Dallon, see Sold (1552)	307
Dalzelle (323)	74
Dark Hollow in Clarion county	237
Darling (754)	111
Darling (1219) see Columbia Hill	298
Darrar (1345)	302
Datum levels; Pittsburg; Engineers32	
Daubenspeck farm	304
Davidson (C. A.) tract	171
Davitt (J) 2	
Davis farm 75,	84, 310
Dawson Centre; Corners; Venango county	
Dawson Centre level	362
Dawson farm	
Dawson old wells (515, 516)	81
Dawson farm well No. 25 (902)	146
Dawson No. 3 (1025)	186
Day (Dr.) well, (617) see Raydure	
Dayton, RR. level	327
Dead Beat (1339)	302
Dean, Vanaman farm (1096)	221
Dage (T. 18.)	21 248

	PAGE
Dean (T. & S.) Nos. 1, 2 (1646, 1647)	310
Troop & Fertig (1094)	. 218
Thombown (1095)	191
Deerfield township, Warren Co	100, 104
Dolon (S. N.) No. 7 (1973)	300
Dolo farm	309
Tiannia Run : tract	TTO! TTC
Dennis Run and New York Oil Co	. 83
Thennis Run No. 20 (623)	83
Denny (1857)	302
Detroit (1626)	809
Devlin, see Dougherty	280
Dickson (Jos.): Well (1031)	189
Dickson No. 1 (528)	81
Dickson, new (531)	82
Dickinson No. 10 (409)	70
Difficulties encountered in levelling wells	297
Dilks (J. H.)	55
Dilworth (1535) see Kirk.	
Dingley (Capt. A.); well (1038)	194
Divide, or Vide (1212)	298
Diviner farm	305
Diviner. Nos. 1 to 7 (1464 to 1471)	305
Dobbins (Th. L.)	273, 274
Doctor Gibson well (1187)	274
Dogtown wells.	308
Donegal township, Butler Co	4, 304'5'6
Double Rig. see Bunker Hill.	
Dougherty farm	288,301
Dougherty & Devlin	286
Dougherty No. 2 (1200, 1311)	286, 301
Dougherty Nos. ?—? (1327, 1328)	301
Down East Nos. 1,2 (1325, 1367)	301
Downs (911)	149
Driftwood RR. level discussed	318, 328
Dry Hole; Economy (994)	180
Duffy (C.) farm	305
Duffy (E.) farm	305
Duffy (P.) farm	265, 306
Duft tract	153
Dugan farm	305
Dugan (1176)	267
Dull (1216)	298
Duncan (G. S.) farm; well (918)	152
Duncan farm	176
Duncan Nos. 3,6 (963, 964)	170
Duncan & Prather farm	152
Duncan & Prather, see Second N. Pet. Co. (917).	
Dunham farm; (S. M.) farm	9.73.79
Dunham Run, branch of E. Pithole Cr	147.149
Drinham Run laval	

	PAGE.
Dunkirk, A. V. & Pitts. RR. levels; Levant	322; 326
Dutch (1571)	308
Dutchess farm	240
Dutchess farm wells (1211 to 1214; 1232 to 1234)	298
Eagle (296)	74
Easterling farm	266
East Oil Creek, Warren Co	88
East Lane Crossing RR. level	341
Eaton (46)	29
<b>E</b> clipse (756)	112
Ecock, see Gibson (1139).	
Economy Co., Nos. 4,6 (985,986)	177
Economy, see A	180
Edenburg, Clarion county	229
Edenburg wells	309, 310
Edinger No. —, No. — (1541, 1542)	307
Egbert farm	76
Eichenlaub farm	307
Eichholtz, No. 14 (1083)	215
Eldred township, Warren Co	195
Elizabeth, Clapp farm (122)	7,61
Elk township, Clarion Co	, 232, 310
Elk (1132)	240
Emery-Octave No. 1 (506)	80
Emery & Caldwell Nos. 1,4 (1260, 1261)	299
Emerson, see Morse	172
Emerson (1518)	306
Emerson & M'Cloud No. 1 (1171)	262
Emerson & M'Cloud Nos. 1,2 (1400,1401)	303
Emlenton, Venango Co	, 225, 226
Emma (1103)	224
Emory (A. A.)	58
Emory No. 1 (117)	58
Emory No. 2 (59; 676)	35, 85
Emory Nos. 3, 5, 6 (677, 674, 675)	85
Emory, see Caldwell (1475).	
Emporium Junction RR. level	318, 328
Ennis (I. L.)	9
Ennis Hill; datum; level	; 8; 334
Ennis Well at Pleasantville	
Ensign farm	75
Enterprise, Venango Co	114, 187
Enterprise, Warren Co	64,65
Enterprise Benedict Estate Well No. 1 (759)	113
Erie Lake and City levels	,328,333
Erie Crossing level	321
Erie & Pittsburg RR. levels, tabulated 324,	338, 354
Eureka (133)	66
Evans [& Co.] Well No, 21 (1201) (1308)	288, 301
Exchange (1231)	298
Excelsior (295)	74

#### INDEX.

Experimental No. 1 (1041)	196
Fagundus Farm Oil Co. (W. & F.)	
Fagundus Wells Nos. 1, 11, 12 (999 to 1001)	182
Fagundus Wells Nos. 1, 11, 12 (955 to 1001)	
Fagundus (1003) see Scott.	157
Fair Farm (931)	10.
Fairview township, Butler Co 240, 249, 250, 250, 251, 252, 252, 250, 250,	304
290, 292, 294, 299, 300, 301, 303	301
Fairview wells	308
Faith (1558)	
Farmer's Hotel; level	32, 33
Farrel (Jas.) farm	242
Farrentown, Armstrong Co	298
Farrentown (1207, 1208, 1209)	<i>∠</i> 36
Farwell farm; well (396)	309
Fertig (1593) see Quick; see Dean	
Fee Nos. 1,7 (05; 391)	38; 76
Fetzer & Myers tract	304, 305
Fink (J. J. B.); wells (63), No. 1 (64)	37
Fink No. — (381)	75
Fink, Shamburg, No. 12.	7
Fisher Bros. (299); Nos. 1, 2, 5 (315, 319, 320)	74
Fisher Bros. No. 6, Gas well (324)	74
Fisher "C" (337)	74
Fisher No. 2 (478); No. 3 (641)	80;84
Fisher No. 8 (Marlin No. 1) (642)	84
Fisher (D.) see Main & Oles (648).	
Fisher, Hasson & Co., Nos. 2 to 5 (1066 to 1069)	210
Fisher, Hasson & Co., Nos. 9, 10, 13, 14 (1070 to 1073)	212
Fisher, Harson & Co., Three leases, No. 2 (1074)	212
Fletcher farm; No. 3 (1524)	199; 306
Florence (1105)	225
Flowing Water well, see Church Run.	
Foggin (360)	75
Folly (1052)	204
Fobes (G. C.) well (31)	22
Ford (A.?) farm	303, 304
Forest City (1341)	302
Forest City No. 1 (1570)	308
Forker No. 1 (1213)	298
Forman No. 3? (1379)	303
Fort Wayne & Chicago RR. levels, table	324
Foster farm; lease	213, 215
Foster No. 1 (L. Bonsall & Co.) (1075)	213
Foster Nos. 2, 3, 6, 9, 12, 14, 17, (1076 to 1082)	213
Foster No. 61 (79)	44
Foster No. 2 (1046)	201
Fowler farm	237
Fowler No. 1 (438)	78
Fox farm	238
Foxburg, Armstrong Co.; wells	38; 307
Frank (1330)	301

	AGE.
Franklin; level	; 314
Franklin Branch of A. & G. W. RR. levels	3, 352
Franklin Branch of L. S. & M. S. RR. levels 33	8, 353
Franklin and Clarion turnpike	206
Franklin and Warren turnpike; level	; 362
Frazer, U. S. weil (885)	139
Frazer (1536)	307
Frederick farm	304
	4;81
Friday (1480), see Adams.	
Fronsinger farm24	3, 299
Frothingham No. 1 (1294)	300
Fuller (1313) see Strickland.	
Funk's Mills, Warren Co	184
Furnace tract	310
Gailey (1302), see Banks	300
Galey farm; (1457)	: 304
Galey, Nos. 1, 2, 4 (1642, 1643, 1645)	310
Gallion level	
Galloway, lease 6 (667)	85
Game (1218)	298
Gamble (T. H.).	41
Gardner (J. T.) United States Survey levels 311,31	
Gardner (J. W.)	61
Garland, Warren Co.	196
	100
Gas well (988) see M. well.  Gas well (1537)	307
	21
Gates (Aaron) farm	207
Gates No. 2 (1060)	83
General Kearney, lease 13? (627)	151
Genesee & Venango Oil Co. (914)	77
Germania (427)	
	10,74
Gipson, (Dr. W.); farm	
Gibson & Ecock (1139)	243
Gibson (1187) see Doctor Gibson	274
Gilbert (R. V.); well No. 2 (1110)	227
Gilbert, No. 2? (1583)	308
Gillam (933)	157
Gillen, Nos. 7, 8, 17 (620, 621, 622)	83
Gillespie farm; well (1500)	305
Gillott (709)	86
Gilson Run, Warren and Venango Co 11	
Glade (1352)	302
Goe (103)	58
Go in and win (418)	76
Golden; farm; well No. 2 (35); (371)	3; 75
Good Enough Nos. 1, 2 (1266, 1267)	299
Good Enough No. 2 (1143)	246
Goodrich farm	206
Good Will (987)	178

	PAGE
Gordon Run	84
Gordon (1358); No. 19 (1349)	303
Gordon Bros. (1424)	30:
Goss Bros (318)	74
Goss Bros. No. 1 (1617)	309
Goss & Carll, Rainbow, Nos. 1,2 (316,317)	74
Goss & Goal, Nos. 1,3 (312,310)	74
Goss & Goal, Nesbitt lot (477)	80
Grace (1402); S. & T. (1472); F. & M. (1473)	303, 305
Graff (405)	76
Graham (J.) farm; well No. 3 (1522)	306
Grand Trunk (78)	44
Grandin, No. 4 (606)	89
Grant Nos. 1,2 (328, 329)	74
C Demonsile (717)	86
Grant, Rouseville (717)	191
Grant (1034)	310
Grant & Aikins (1635)	
Gray (1622)	309
Gray Bros. (1638)	310
Great Belt City level	313
Great Republic farm; tract	41; 76
Great Republic Oil Co. tract	160
Great Republic, Nos. 1, 2, 3, 4 (945 to 948)	163
Greece City, Butler Co	347 <b>;</b> 248
Greece City wells	301,302
Green, see Rush (1594).	
Green farm, Stewart's run	70,77
Green-flag (304)	74
Gregg (J.) farm	189
Grey Nos. 2,4,6 (448,449,450)	79
Grey Eagle (288)	73
Grey's (J. S. )mills.	171
Guffey see Allshouse (1581).	
Guild farm; well No. 4 (971)	172
Guild & Wright tract	9
Guyer (1602)	309
H. L. T. & Co., No. —, No. 3 (1386, 1387)	303
H. L. T. & Co. (1650)	310
Hague (1037)	143
Hague Nos. 6, 8, 9, 10 (577 to 580)	
	82, 83
Hague (W. W.)	
Hague (Wm.) No. 5 (575)	821
Hague & Cummings Nos. 5,7 (569,570)	82
Hague & Manwarring (572)	82
Hale (Arthur)	312
Hall's Run, Venango Co	206
Hall (now Moses) farm; well No. 1 (1183)	272
Hall (R. W.) (384)	75.
Hamilton (129); (433)	64; 77
Hammond (F. E.)—Bros. No. 1 (68)	38, 39
Laney farm; well (1610)	309+
Farding & Jones	51

	PAGE.
Hardison (1580)	
Hard Scrabble (1599)	309
Hare (C. W.); (1831)	196; 301
Harley (Stephen)	, <b>24</b> 0, 269
Harley & Burzer (1553)	307
Harley Bros. (1591, 1595)	309
Harmonial No. 1 (24; 1026)	18; 187
Harmonial Nos. 2, 3, 4, 9 (27, 330, 346, 653)	74,75,84
Harold (1575)	308
Harrington (1507-1509) see Bronson.	
Harrington (120) see Rallston.	
Harrington No. 1 (1255)	299
Harper farm	248
Harrisburg datum level	311, 327
Harrop & Co. farm No. 1, (1259)	299
Harsh tract 14,80,84	, 174, 175
Harsh (E.) (638)	
Harsh (480, 481, 482)	. 80
Harsh No. 2 (497); 3 (496)	80:80
Harsh No. 6 (494); 6 (984); 7 (498)	175; 80
Harsh Nos, 8, 10, 11, 13, 14, 16 (489 to 495)	80
Harsh (new) 639; No. 28 (640)	84
Harsh (S.); well No. 3 (14)	14
Hart (344)	75
Hart, (650) see Jim Hart.	
Hart & Conkle (1484)	271, 305
Hart & Hicks, Nos. 1, 2,, (1243 to 1245)	299
Hart, see Burtis.	146
Harvey (420)	76
Harvey No. 1 (761)	113
Harvey gas well (1181)	270
Harvick (1585)	308
Haskell (H. M.)	204
Haskell (333); (647)	74; 84
Hasson see Fisher	210
Hatch (F. A.)	296
Hayden (Dr. F. V.)	311
Hazelwood Oil Co. tract	290, 300
Hazelwood Nos. 13 (1168); 21 (1202)	260: 290
Hazelwood Co., Nos, - (1277, 1278)	300
Hazelwood Nos. 8, 13, 21, —, (1281 to 1284)	300
Haworth's mill level	362
Hebert; tract; farm; reserve	
Hebert (J. H.)	3,63
Helmbold (Mr.)	269
Hemphill (J.) farm; heirs' farm.	
Hemphill (Widow) farm	
Henderson farm	41
Hendrickson & Walker	57
Henry's Bend of All. river	63
Hermage (1573).	308
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	900

	PAGE
Hermon Station Oil Co., No. 2 (1533)	
Hermon Station	307, 348
Hess (M. E.)	
Hess, Bradley & Co	
Hewins No. 6 (380)	
.Hickory farm	
Hickory shade (1588)	
Hickorytown road	
High Flyer (1338)	
Hidden (385)	75
Hill tract; farm	
Hill, Nos. 2, 4, 5 (525, 526, 527)	81
Hill, No. 6, see Jenkins.	01
Hinckley farm, Allender run	77
Hinckley (430); No. 3 (929)	
Hinds (E. W.)	59
Hine (Stephen)	18
Hoag (483,484)	80
Hogan (1418)	
Home ([) form	304
Hoge (J.) farm	204
Holbrook (R. W.)—No. 1 (53)	32
Holbrook No. 2 (355)	75
Holeman and Newkirk tract	74
Holliday and Ritts (1546)	307
Holmden farm	
Holmden run, Pithole district	144
Holmden Nos. 115 (886); 127 (887); 129 (888) (889)	140
Holmes & Brown No. 1 (488; 981)	
Homewood leyel,	324
Homestead No. 3 (351);—level	
Hood (Cap. Robert)	273
Hooker (Jim.) (1343)	302
Hoop (John) (321)	74
Hoopskirt Nos. 1, 4 (1227, 1228)	298
Hoosier (37); (901)	24; 145
Hoover (1353)	302
Hope (1117)	230
Hope (1319); No. 1 (1337); No. 2 (1336)	301
Hope (1637)	310
Horn (1612)	309
Hornet (1309)	301
Horse creek, Venango county	204
Horse Shoe No. 1 (49)	30
Horton No. 1 (553)	82
Horion & Co	193
Howard (1462)	308
noward Oil Association lease	62
Howarth's Mill	151
dowe (/)	11
Hoyt (473)	79
Hughes & Harrison (362)	75

	PAGE,
Huidekoper tract	80
Huidekoper Pet. Co. of N. Y. Farm.	37
Hulings (1545)	307
Hulings Nos. —, — (1633, 1634)	310
Humboldt; Refinery	84; 85
Humes farm; Nos. 1,2 (1530, 1531)	307
Humes (or O'Connor) (1177)	267
Hummell farm	227
Hummel tract; well (1582)(1587)	308
Humphrey No. 2 (132)	68
Hunter (Dr. W. G.)	278
Hunter (G. S.) farm	81
Hunter (1178); (1534)	
Hunter Nos. 1,2 (1487,1488)	305, 805
Hunter No. 3, (567)	82
Hunter well of 1865 (518)	81
Hunter & Cummings; Nos. 9, 10 (1160, 1161)	254
Hunter & Cummings; Nos. 9, 10, 11 (1394 to 1396)	303
Hunter, Hebert & Caril, (128)	63
Hunter, Hebert & Carll, (519)	81
Hunter see Jennings	82
Huselton farm; well (1375)	
Hussey & M'Bride farm	302 63
Hutson No. 2 (549)	82
Hyde creek in Venango county	171
Hyde & Coleman (325)	74
Hyland (S.)	56
Hyner farm	•
Ida	304
Ike Weed (135)	67
Independent Oil Co. farm; tract	75;85
Index of levels of places in oil regions	-
Ingleside (1257)	299
Insinger (Alb. Jr.)	14
Invincible (1373)	302
Iron City, Burchfield, (327)	74
Irvine farm; Irvin farm	82; 184
Irvineton RR. levels 314, 316, 322,	-
Irvineton bridge levels	321
Irwin farm	154
Island see M'Kinney (865).	
Jack (G. H.) — well (5)	11
Jack farm 10,	
Jack Brown see Brown No. 1 (66)	38
Jackson township, Venango county	200, 201
Jacobs (W. K.)	216
Jacobs (1247)	299
James farm	74
James (Abram) (1120)	232
Jamestown, Mercer county levels	, 323, 325
Tamiagan farm	200 209

	T True
Jason farm, see Clapp (J	83
Jefferson county, Ohio	282
Jefferson township, Butler county	270
Jefferson township, Mercer county,	275
Jeffersonville; wells	
Jenkins (D.) farm	249
Jenkins No. 2 (or Hill No. 6) (523)	81
Jenkins (322)	74
Jenkins (1148) No. 2?	249
Jenkins (1249)	299
Jennie (285)	73
Jennings & Hunter tract	82
Jennings & Ralston farm	200
Jennings & Ralston (1044) see Sugar creek.	
Jennings No. 5 (1305)	301
Jennings Nos. 4, 5 (1390, 1391)	303
Jersey (411)	76
Jersey City RR. level	
Jerusalem Corners	189
Jim. Hart (650)	84
Jim. Hooker, see Hooker	302
Jocelyn (A, H.); No. 1 (141); No. 2 (429)	70;77
Johns (Wm.)	69
John's History of Petrolia.,	185
John Hoop see Hoop.	
Johnson (Jesse)	188,282
Johnson (J)	202
Johnson (358); (404); (1029)	; 76 ; 188
Johnson's Run	80
Johnson Run Road, Venango county	79
Johnson Station level	329
Jones (N.); (J.)	51;196
Jones (353); (792) Columbia farm	75; 122
Jones' "Petroleum" (628)	83
Joy tract, Nos. 4, 5, 7, 9 to 14 (539 to 545)	82
Joy see Morse	172
Karns City wells, Butler county	, 300, 304
Karns (1371); No. 6 (1385)	302, 303
Keating farm, No. 1 (1107)	,226
Keech farm; well (690)	85
Keech school house, Venango county	84
Keep farm	149
Keily Bros. (1596)	309
Keir No. 1 (116)	58
Kelly Bros. S. Beal farm (1112)	228
Kelly Bros. Cropp farm (1113)	229
Kelly Station level	329
Kepple farm	304
Kerns (W. H.)	14
Kern No. 6 (1204)	294
Xerr (A. J.)	70

	PAGE.
Keystone (412); (631)	76;84
Keystone (699) S. Whitman; (1417)	86:304
King lot; farm; well (138)	78;68
Kincald farm (1407)	303
Kirk and Dilworth (1535)	307
Kiskiminitas river; bridge level	77:329
Kittanning bench mark; RR. level	329, 330
Kittanning (1133)	241
Knoll (N.) farm	309
Kratzer (507); No. 1 (511); No. 1 (982)	80:175
Kratzer (P.)	175
Kribbs (Widow) farm	309
Kuhn (Kuhnu)	143
Lady (363)	75
Lady Campbell (1270)	299
Lady Jane No. 1 (61)	36
Lady M'Clelland (1351)	302
Lady Moore (1415)	304
Lady Suffolk (112)	56
Lady Suffolk, Blood farm	7
Lady Sutton (1346)	302
Lafayette (632)	84
Lake elevations above ocean level	335
Lake Erie datum; level 311;	319, 321
Lake Shore & Michigan S. RR. levels, tabulated	323, 353
Lakeville, Crawford county	273, 274
Lamb farm; well (374)	75
Lambert (401); — No. 1 (1028)	76; 188
Lambert No. 8 (943)	161
Lambing (1126)	238
Larden's Mills; see Morehead; see Nesbitt 270; 292,	
Last Chance (1576)	3 08
Laughlin (W.) (1190); -(F. B. & A.)	277
Lauretta Nos. 1,2 (1317, 1318)	301
Lavinus (688)	85
Lawrence county	
Lawrenceburg, Armstrong county	242
Lawrenceburg (1206)	298
Lawson's land	204
Lebanon see New Lebanon, Warren county.	
Lechner farm; (1503)	305
Ledsham (Alf.) No. 1 (33)	22
Ledsham (470); No. 2 (471)	79
Lee, see Balliot (1627).	
Leechburg, Westmoreland county gas well (1191)	277
Legal Tender (1566)	308
Leneman farm	231
Lesley, J. P	258
Levantlevel	326
Levels of places in alphabetical order	
Levels along the Allegheny Valley RR	329

382 I.I. INDEX.

	PAGE
Levels in Clarion Co., &c., Ch. XXV	296
Levels along RR	235
Levels of RR. stations, &c., Ch. XXVI	311
Licking creek, Clarion Co	234
Lightfoot (1272)	300-
Lightning (300)	74
Limestone township, Warren Co	177
Limestone Village, N. Y	272
Lincolnville level	338
Lineman farm (1118)	231
Lioness (1211)	298.
Lippincott, No. 1 (11)	13
Little Giant (347)	75
Little Joe (1437)	304
Lockwood (E. M. & T. J.) No. 1 (62)	36
Lockwood farm	81
Logan (954)	168
Logan's Station and Logan's Summit level	
London, see New London	183
Lone Pine, Nos. 1, 2 (1556, 1557)	308
Lone Star (294); No. 1 (1389)	
Lone Walking Beam (1544)	307
Long & Gibson (713)	-86
Long & Raymond (383)	75
Loraine Co., Ohio	282
Loud	25
Low Grade Division A. V. RR. levels, table	
Lowell (L.) (124)	
Lower Baum tract.	62 217
Lucas (D. Jones)	•
Lynn No. 2 (109)	55
Lyon, Shorb & Co	•
M. well, Gas well, Economy (988)	178
Madden (126)	63
Madison Nos. 1,2 (1122, 1123)	
Maggie well	243.
Maggie (1207); Ralston farm (1329)	
Maggie No. 1, Barnhart farm (1356)	302:
Magnolia No. 1 (741)	103
Magnolia No. 2 (548); No. 2 (742)	
Mahan farm; well (1182)	271
Mahoning Division A. & G. W. RR. levels	
Maid Nos. —, — (1516, 1517)	3 0 6 .
Main and Oles, Fisher (D.), (648)	8 4
Major farm; well (139)	69 ·
Manchester (Otis)	195
Manchester, Allegheny Co	278
Manorville Station level	329
Manross farm	154
Marion (1215)	298
Manual or Reliance (298)	74

	PAGE.
Maple Shade No. 1 (52) (356); No. 3 (357)	31:75
Maple Shade (413); (1233)	76: 298
Marlin Nos. 1, 2 (642, 643) see Fisher No. 8	. 84
Marr (334)	. 74
Marshall farm	185
Martinsburg wells245	, 246, 299
Martin & Myers (1584)	308
Mary Ann (97); (1316); (1366)	,301,302
Mary Ann (953) see Autumn.	
Mason (30); No. 1 (1047)	21; 201
Master's farm; well? (1572)	227; 308
Mattison (Gaylord);—farm 1	9: 28,74
Mattison & M'Donald (1170) (1297)	262,300
Maud Jack (1333)	301
Maxwell, see Cleminger	301
Mayville tract; No. 2, No. 4? (1322, 1323)	301
M'Alear (?) farm	300
M'Allister farm; Nos. 1, 3, 5 (1493'4'5)	305
M'Bride farm; well (1054); see Hussey	25, 205
M'Cafferty farm; Nos. 2 to 11 (1149 to 1158)	250, 251
M'Cain (A.)	243
M'Cambridge (955)	168
M'Caslin (J.) farm; No. 1 (1030)	30; 189
McCaslin, 1874, (644)	84
M'Cleary farm	286, 301
M'Clelland (S.) farm; No. 1 (1354)	302
M'Clintock farm; (292, 293) gas	62; 74
McClintock (H.) well (1192); (1448)	
McCloud (1171); (1401) see Emerson	
M'Clune (Jas. B.)	10, 20, 21
M'Clyman's farm; No. 7 (1299)	262, 300
M'Collough (1449)	
M'Comb, lease 46 (637)	84
M'Connell township	24
M'Cort (John); No. 5 (965)	170
M'Cort Nos. 3, 5, (453, 454)'	
M'Dermott farm	
M'Devitt (1589)	309
M'Donald (R.) & Co. farm	81
M'Donald, see Mattison (1170) (1297)	300
M'Donald (1293); (1653)	
M'Elhenny farm; (1049)	202
M'Gara (S.)	
M'Garvey farm; No. 1, No. — (1377, 1378)	303-
M'Gee; well (286); well (458)	; 73; 79
M'Gee hill level,	30L
M'Gill (1431)	
M'Ginley farm; No. 3 (1481)	305
M'Grew farm; Brothers; M'Grew (D.)	
M'Grew Bros. (331, 332)	74
M'Grew Bros. (1106)	226

	Page
M'Grew Nos. 1,2 (1055, 1056)	
McGrew, Goodrich farm, (1059)	
McGrew & Ritchie (4)	. 10
McGrew (Jas.) No. 1 (26)	. 19
McGroary farm	. 156
McGuire farm	79,170
McGuire farm (P.)	305, 306
McGuire & Co. (1623)	309
M'Ilhatten farm, No. 1 (1114)	
M'Kay, No. 4 (1609)	309
M'Kee (W.); McKee (C.) farm	220
McKelvey & Co., Nos. 2,3 (557, 558)	
McKenney, Nos. 2,, 12, (1441, 1443, 1459)	
M'Kinney (C. B.); Nos. 1,2 (131, 132)	65
M'Kinney	
M'Kinney farm	30 to 196
M'Kinney No. 1 (762)	114
M'Kinney Nos. 1, 2, lease 10 (860, 861)	190, 191
M'Kinney No. 3 (533); No. 4 (1442)	82; 304
M'Kinney No. 13 (1460)	
M'Kinney No. 17 (862); No. 17 (1461)	
M'Kinney No. 19 (1462); No. 29 (old No. 6, 863)	-
M'Kinney Nos. 39, 40 (Island Well) (864, 865)	
M'Kinney Nos. 63, 68, 73, 91 (866 to 869)	132, 133
M'Kinney Nos. 104, 105, 107, 119 (871 to 874)	134, 135
M'Kinney Brothers (1454)	304
M'Kinney No. — (1458)	305
M'Knight farm	172
M'Laughlin (Tobias); No. 1 (983)	, 185, 187
McLaughlin No. 1 (509); No. 5 (510)	80
McLaughlin (1024)	185
McLaughlin, small farm (1027)	187
McLaughlin & Hayes (W.) (1194)	280
M'Laughlin farm; well (1555)	205 • 207
McMann (712)	86
M'Michael (1482)	304
M'Millan farm (P. & B. Co.)	
M'Millen Nos. 15, 17, 47, 47 B (1089 to 1092)	217
MINOIT (272) - No. 1 (207) No. 2 (208)	218
M'Nair (372); No. 1 (397), No. 2 (398)	75,76
M'Nair, Tyrrel (J. N.) farm (912)	150
M'Nulty (1579)	308
M'Vey (461, 463)	79
M'Vey & Co. (1416)	304
Mead (1173)	263
Mead Nos. 1, 2, 3 (1511, 1512, 1513)	306
Meadville No. 1 (283)	73
Meadville level	339
Mechlin No. 1 (1453,) see Thompson	304
Mendenhall farm; No.? (1614)	200
Mercer township, Mercer Co	274, 275
Merrill (462)	70

		PAGE.
Merrick (609)	• • • • • • • • • • • • • • • • • • • •	83
Middlesex township, Butler Co	• • • • • • • • • • • • • • • • • • • •	271
Miller, see Ray (1574).		
Mill Creek township, Clarion Co		232
Mill farm, see Hebert		
Millerstown wells	304,	305, 306
Miller Oil Co. No. 1 (1350)	•••••	320
Milton; farm, see Fisher & Co		210,208
Mitchell farm		74
Mingo Chief (1109); (1568)		
Minor (S.) farm	80, 117, 130, 151, 154, 171, 172,	187,282
Minor farm	• • • • • • • • • • • • • • • • • • • •	146, 147
Minor Nos. 1,2 (485,486)		80
Minor No. 4 (904)		147
Minor farm wells Nos. 31, 34, 47 (907 to 910).	• • • • • • • • • • • • • • • • • • • •	148
Minor's well level		362
Mitchell (Byron) No. 1 (111)		56
Mitchell No. 2 (1312)		301
Modoc (1335)		301, 302
Mohawk (1340)		302
Monterey No. 1 (1163) No. 2 (1164)		256,257
Moon farm No. 2 (1115)		229
Moore (J.) farm; (W.) farm	• • • • • • • • • • • • • • • • • • • •	304
Moore (N. L.)	• • • • • • • • • • • • • • • • • • • •	238
Moore's Salt Works, Jeff. Co. Ohio		282
Moran (Amb. J.)		56
Moran Nos. ,— (1615, 1616)		309
Morgan (W.)		34
Morehead, Lardin & Co		292
Morehead & Lardin No. 2 (1203; 1384)		292; 303
Morse (Chester); Morse, see Cadwallader		68
Morse & Hunter No. 1 (568),		82
Morse, Emerson & Joy (970)		172
Morey farm	130, 18	
Morey farm No. 1 (lease 1, 2, 3) (875 to 877).		136
Morey No. 2, lease 2 (878)	• • • • • • • • • • • • • • • • • • • •	137
Morey Nos. 3,4, lease 5 (879,880)		137
Morey No. 155 (881)		138
Morey No. 184 (Burtes well, 882)		138
Morey, Copeland Reserve, Nos. 4,8 (883,88	4)	139
Morning Light (297)		74
Morrison (J.)		242
Morrison farm		
Morrison No. 1 (1144)		247
Morrison Nos 1, ? (1369, 1370)		302
Mortimer farm		
Moses (Job.) farm (old Hall's) No. 1 (1183		
Mount Hope (967)		171
Mount Hope		
Mount Hope No. 3, Prentice F. & Co. (1084)		
Mountain (652); No. 4. (654)		84
25—I.I.		

	~
Mudge (A. B.)	. 53
Munson (120)	60
Murphy farm: (P.) farm	305, 306
Murphy (Ball farm, 896)	143
Murrin (W.) farm	203
Myers & Sherman (386)	75
Myers, see Fetzer tract	304
Myers, see Martin (1584).	
Myrtle Fisher Bros. (314)	74
Mystic (1232)	400
N. well Economy (989)	178
Nameless, Clark farm (369)	75
Nameless well (1388)	303
National Oil Co. tract	34
National Petroleum Co. farm	75
National No. 1 (365): No. 2 (57)	75; 34,7
Neal(1563)	3 8
Neelev farm	307
Neff (J.) farm	306
Neill lease 42 (636)	84
Noill (1028)	194
Neilitown, Forest Co	70, 81, 84
Neilltown road	20
Nell (72)	41
Nellson (A. H.)	193
Nesbitt lot	80
Nesbitt No. 1 (1167); (1649)	260;310
Nesbitt & Lardin Nos. 1,3,5 (1274 to 1276)	300
Nesbitt & Larden No. 2 (1300)	300
Nettleton (E. S.)	1, 12, 187
Nettleton's Extra list	73
Nettleton farm; No. 1 (8)	12; 13
Newburg Crossing, RR. level	326
Newberry (J. S.)	6
Newberry (656,657)	74
Newcastle, Lawrence Co. level	, 324, 326
Newcastle & Beaver Valley RR. levels	339, 357
Newcastle & Franklin RR. levels	339,356
Newkirk farm; see Holman	73,74,81
New Lebanon	177
New London, Warren Co	183, 184
New London Oil Co	82, 83
Newton (426); (1307)	77;301
Newton (W. F.) gas well (1043)	197, 198
New well in 1875, Mattison farm (303)	74
New York & Allegheny Oil Co	118
New York & Allegheny tract 85	3, 84, 181
Northern N. Y. Oil Co. tract, Cashup	80
N. N. Y. Oil Co. Gas well of 1865 (514)	80
N. Y. & Providence Pet. Co.'s farm	32, 75
N V & Fria PR lavels discussed 326	339 360

Pac	GH:
Niagara No. 1 (134)	67
Nicnols (J.)	12
Noble (406)	76
Norman (29) see Potter	21
Northern Central RR. levels discussed	328
North Star Co.'s Clark farm; No. 2 (36)	24
North well, lot No. 14, Minor farm (905)	147
Now (J.) farm	306
	202
Oakland No. 4 (1506)	305
Oak Shade No. 1 (60)	35
O'Connor (1178) see Humes	267
Odell (373)	75
	306
	230
O'Hara, see Shamburg (1476).	
Oil City	210
Oil City Union Depot datum	334
	332
	321
	323
Oil Creek	190
Oil Creek (east)in Warren Co	88
Oil Creek township, Venango Co	190
Oil Creek township, Crawford Co	198
Oil Creek, Columbia, Story farm wells	125
Oil Creek wells	
Oil Creek Lake	274
	273
O. C., L. L. & M. Co. Nos. 1,2 (1185,1186)	274
	320
Oil Creek & Allegheny Valley RR. levels 321, 338,	346
O. K. of Raydure, Watson & Co. (608)	83
	304
Old Walter Scott Oil Co	85
	319
Oleopolis	62
Olive (40); (1364)	302
Onondaga (758)	113
	305
Orchard (290); (467); (520, Newkirk)	,81
Orleans (966)	171
Original Petroleum Co. tract; No. 2 (1033)	190
Orthodox (403)	76
Osceola (1332)	301
Ottman, Nos. 1, 2, 3 (550, 551, 552)	82
Overy Nos. 2, 6, 12 (1496, 1497, 1491)	305
Overy Nos, (1498, 1499)	305
Overy, see Brawley (1334); see Parker (1174).	
Overy, see Riddle.	
Packer (1134)	241

388 I.I. INDEX.

ı	PAGE.
Pacific No. 1 (114)	57
Painter & Warner (1630)	310
Panton (Alex.) (1561)	308
Parker farm	76, 253
Parker farm, Titusville	168
Parker (J.) farm	303
Parker (N. B.)	249
Parker, Butler Co	299
Parker City; (1205); wells	438; 298
Parker Nos. 1, 3, 5, (439, 440, 441)	78
Parker Nos. 2, 3, 4, (956, 957, 958)	168, 169
Parker Nos. 8, 9, 10, (959, 960, 961)	169
Parker's Landing; Parker's level	4;313
Parker township, Butler Co	, 245, 246
Parker & Karns City RR. levels	
Parker & Overy (1174)	265
Parkhurst (Grant)	33
Parnassus Station level	329
Parshall's Corners	362
Parshall (E. W.) Nos. 1,2,3 (784,785,786)	
Parshall (J. & E. W.) Nos. 4,5,7 (778,779,780)	118
Parshall (J. & E. W.) Nos. 9, 10, 12 (781, 782, 783)	118, 119
Parsons (Mr.) No. 6; (1208)	
Partridge (E. E.)	50
Paschmacker (45)	28
Patchell run, Venango county	202
Patterson farm	43
Patton farm; No. 2 (1324)	301
Patten (714)	86
Paxton House	151
Peanut (435)	78
Peninsular Oil Co.'s (968)	171
Perdue Nos. 1,2 (1289,1290)	300
Perry county	298
Perry township, Armstrong Co 237,240 to 243, 253 to 257,	
Peiry (W.); Well (1135)	
Person's (F.) farm, N. Bear cr. (1242)	299
Persons No. 6 (673)	85
Peter's (Adam) farm	
Petersburg, Clarion co	226
Petrolia, Butler co 237, 245, 246, 260, 283, 284, 286, 288, 290, 292,	
Petrolia wells 300,	
Petrolia to St. Joe, Butler Co	260
Petroleum Centre	,76,154
Petroleum Co., see Original P. Co. (1033).	
Petroleum, see Jones (628).	
Petty, lease 3, (689)	85
Pettibone (460)	79
Pettigrew (Jas.)	•
Philadelphia RR. level datum	8,235
Philadelphia & Boston Co. (1089) see M'Millen	217

	PAGE.
P. & E. RR. levels found correct at west end	314
P. & E. RR. levels discussed 318, 320, 321, 324, 3	27,348
Phillips, No. 2 (107)	54
Phillips, Nos. 1, 2 (446, 447)	78
Phillips, Rynd farm, (919)	N 5.
Phillips Bros	219
Phillips Nos. 1, 2, (1651, 1652)	310
Phillips, Galey? farm (1654),	310
Phœnix Nos. 1; 2 (56; 364); see Bronson	33; 73
Pickwick wells	09,310
Pierce & Bagley (205,348,387)	74,78
Pierson (58)	34
Pilgrim, lease 33, (633, 634)	8:
Pine Creek, Warren Co.; Venango Co 88; 1	68, 170
Pine Creek Bridge level	361
Pine township, Armstrong Co	277
Pine Shade (913)	150
Piney township, Clarion Co	234
Pinner (88)	47
Pioneer Venango Co 43 to 45, 50,	51, 165
Pioneer No. 1 (1549)	307
Pitcher (E. L.)	34
Pithole Creek	47, 151
Pithole (east and west)	85
Pithole Creek level	362
Pithole 3, 23, 30, 75, 144, 145, 1	46, 152
Pithole city; road24, 13	
Pithole, Golden & Cherry Run Pet. Co.'s Golden farm	23
Pithole, G. & C. R. Oil Co.'s tract	30
Pithole wells	130+
Pithole Water Well (889)	140
Pithole & Oleopolis RR. levels	362
Pittsburg; Union Depot datum level	29, 334
Pittsburg, F. Wayne & C. RR. levels 329,3	39, 358
Pittsburg & Stoneboro', levels	324
Pittsburg & Cherry Run Oil Co. lease	37
Pittsfield township, Warren Co	196
Plan of leveling oil wells adopted	296
Plank Road, Venango Co., levels	
Pleasant Unity, Westmoreland Co	280
Pleasantville, Venango Co., level	362
1, 3, 7, 29 to 34, 70, 88, 147, 149 to 151, 156, 157, 160, 173 to 175, 185, 187	to 189
	9 to 28
Pleasantville borough wells	
Pleasantville Corners	20, 32
Pleasantville & Enterprise Road, survey	28
Pleasantville to Church Run, survey	78,79
Pleasantville to Tionesta, survey	79
Pleasantville to Tidioute survey	81, 82
Pleasantville to Rouseville, survey	84, 85
Plumer Venango Co	•

390 I.I. INDEX.

	PAGE.
Plumer & Titusville road,	42,84
Plumer No. 1 (10)	13
Pochatoe Bridge level	329
Point (719)	86
Pole Tool (687)	85
Porkey Run well (1042)	197
Porter, Foster farm	7
Porter (W.) farm	18, 19
Porter farm	
Porter No. 1 (77); (629)	44,84
Porter & Taylor No. 1 (23)	18
Potter farm	82
Potter wells Nos. 1 to 8 (746 to 753)	06 to 110
Potter (Norman); (29)	
Prather Corners; homestead	85, 151
Prather farm well, 1865 (692)	85
Prather, see Duncan	152
Pratt farm, Pithole (431)	77
Pryer No. 1 (402)	
Prentice (F.) & Co. see Mt. Hope (1084)	
Prentice Nos. —, — (1409, 1410)	304
Prentice, M'Ginley farm, Nos. 1, 2, 3 (1477, 1478, 1479)	305
Prentice (1502; 1527)	305, 306
President	77
Preston (459; 464; 465)	79
Preston Water Well (1291)	300
Preston (1355); No. 1 (1374); (1436)	302;304
Prosser farm	21
Queen (336)	74
Quick & Fertig's Injectors	108, 111
Race Bros. (1548)	307
Radure (W. & Co.) Nos. 2, 3, 4, 5 (611 to 615)	83
Radure (W. & Co.) Dr. Day (617)	83
Radure & Watson (995)	180
Railroad levels, chapter XXVI	235, 311
Rainbow, see Goss & Carll	74
Rallston & Harrington	120
Ralph (1279)	300
Rallston farm; see Jennings	301;200
Ramsey & Baker's corner, Triumph	83
Ramsey (J. W.)	237, 242
Rankin (D. C.) farm	301
Raritan Bay datum level	8,78,88
Rattling Jack (1250)	299
Ravenna Crossing level	326
Raver, (C. L) & Co	17
Raymilton	200
Ray & Miller No 1 (1574)	308
Kebecca Jane (1256)	299
Red Bank Junction RR. level	218
Red Cross (1372)	900

	**
Reddick farm (1225, 1226)	PAGE.
Pod Flog wolls are Start (1999)	-
Red Flag wells, see Scott (1003)	183
Red Rig (626)	83
Reed (417); Enterprise (419)	76; 77
Reed No. 2? (697); Old (698); Old U. S. (711)	86
Reed (763); (1306)	
Reid (Andrew) (1590)	309
Reis, Brown & Berger	275
Reiter (104); (791)	53; 122
Reliance see Manual.	
Relief, Nos. 1,2 (1485, 1486)	305
Reno, Venango Co.; Oil Co	85; 208
Reno, Nos. 7, 30, 38, 50, 77 (1061 to 1065)	08 to 210
Rensselaer Oil Co. No. 10 (74)	42
Reynolds farm, Pithole; No. 41 (900)	130, 145
Rice No. 2 (342); now Wesley (649).,	74:84
Rich (J. S.) (1036)	191
Richards,	44
Richardson, Tidioute; Nos. 1, 2 (787, 788)	121, 122
Richey No. 1 (9)	12
Richland township, Venango Co.	224, 225
Richland township, Venango Co	307, 308
Richland furnace	307
Richmond, Clarion Co	226
Riddle (L.) farm; No. 16 (1403)	
Riddle, or Overy No. 5 (1510).	306
Riley Bros (1604, 1605)	309
Ripley (903); see Woods (1145, 1362)	
Rising Sun (6); (777)	
Riss, see Brown (1450)	11;117 304
Ritchie & Co. tract; Ritchie	
Ritter (Victor) (1550)	307
Ritts, see Holliday (1546)	307
Ritts (E.) farm; Ritts farm	
Robbins (610)	83
Roberts (1360); Jamieson farm (1368)	302
Robinson (W. D.) farm	
Robinson farm (1215 to 1218, 1227 to 1232),	298
Rochester, Beaver Co.	279
Rochester, Tumbler Co.'s No. 1 (1193)	279
Rock (359)	75
Rockland Station, A. V. RR., Venango Co	207
Rockland township, Venango Co 213,21	5 to 217
Rob Roy (1298)	300
Rogers (H. S.)	66
Roof (522); No. 1 (524)	81
Rooker farm	, 141, 142
Rooker farm well, near U. S. (890); No. 2 (891)	122
Rondout (920)	153
Rosebud (1258)	299
Roston Station level	329

	PAGE.
Rouseville Oil Co	60
Rouseville, Venango Co	, 153, 191
Rowley, see Bly	299
Ruby (302)	74
Rugg's Hill level	362
Rupert farm, well (1538)	307
Rush & Green (1594)	
Russell farm, Nos. 1 to 5 (1097 to 1101)	22 to 224
Russell Run	223
Rynd farm 57,58,8	5, 86, 153
Rynd farm, No. 23 (115)	7,57
Sadie (1365)	
Sadorus farm, No. 1 (961)	
Salamanca level	
Salem, Venango Co	205, 206
Salem township Clarion Co	. 308. 309
Salem Crossing level	323, 326
Salina, Venango Co	206
Saline township, Jefferson Co., Ohio.	
The state of the s	
Sandy Creek township, Venango Co	
Sassafras No. 1 (73)	
Satterfield & Taylor (1264)	
Saulsbury (1411)	
Saxonburg	
Saxon Station, Butler Branch RR	
Saxon Station Gas Well (1179)	269
Say, Nos. 2,5,6 (21,20,19)	
Say (1146)	
Say (H. H.) farm	
Say, Nos. 1, 2 (1286, 1287)	300
Say, Nos. 1, 5, 7 (1404, 1405, 1406)	303
Say & Williams (366)	75
Schmick (P.) Nos. 1,2 (559,560)	82
Schmick, (P.) No. 1, (1022)	184
Schmick (Capt.)	225
Schnure farm	268, 307
School House well No. 1 (1376)	303
Schribel	63
Schreiber (P.) No. 1 (15)	14;250
Schuyler	166
Schuylkill Bridge datum level	8
Scott No. 3 (442)	79
Scott (Charles) No. 1 (508)	80
Scott No. 11 (661); best (662)	85
Scott farm, Fagundus, Nos. 1,2 (1003, 1004).	
Scott (W.) farm	183
Serubgrass; — township, Venango Co	300
Scruborass Creek	417; 222.
Scrubgrass Creek	
Scrubgrass Island well No. — (1085)	216
~~~ ~~~~ Daum 181111 (1900); (198/)	91G

	PAGE.
Scrubgrass, new well (1088)	217
Scudder (1430); (1489)	304;305
Second National Pet. Co. (917)	152
Sedgewick farm	219
Severance (L. H.) see Williams	67
Seibert (B. B.) farm; (1419)	304
Shakely (H. R.) farm; (311)	290; 74
Shamburg; farm and wells around	75,76
Shamburg Nos. 1,, 5, 8, (376 to 379)	75
Shamburg (East)	84
Shamburg & O'Hara (1476)	305
Shammut (1567)	308
Shaw farm; (607)	191;83
Shaw lease 35 (635); No. 8 (932)	84:157
Shanghai (1320)	301
Shorb, see Lyon	234
Short (?) farm (1648)	310
Showalter (1505)	305
Shreve Nos. —, 1, (1438, 1439)	304
Shugart (T. B.); Shugert farm	15 74
Sheakley farm	260
Sheakley, (H. P.) farm; No. 1 (1285)	300
Sheakley & Blaney farm	300
Sheakley heirs farm	304
Sheakley Nos 2,—, (1421, 1422)	304
Sheasley (1136)	242
Sheffield township, Warren Co	
Sheffield Gas Well, see-Hague (1037)	143
Shelmadines.	81
Shenango Iron Co.'s Gas Well (1189)	275
Shirley (1528)	306
Sherman No. 1 (76)	43
Sherman (291); (375); (434)	
Sherman (1601); Widow Krebbs farm (1111)	209: 228
Shidemantle (1271); (1515)	
Shingle Mill Nos. 1,2 (990,991)	
Shippenville; furnace (1119)	
Shite Poke No. 1 (1446)	304
Siggens (Jas. Y.) farm; (47)	
Simcox farm; No. 3 (1644)	219 : 310
Simpkins (S.)	26
Summit No. 1 (1532)	307
Siverly farm; Siverly & Gardner; Allegheny river	7;61
Skidmore (38)	25
	39
Skinner No. 1 (67)	204
	234
Sligo (1121)	235
Sligo Branch RR. levels	200 80
Slingerland (487)	
Small larm	79

Smith (354); (361); Enterprise (422)	75,76
Smith (W.): Smith (Mr.) farm	270;300
Smith S. Troutman farm. (1342)	302
Smith (1490); (1560)	305;308
Smith's Ferry, Beaver county	281
Smith & Schribel (127)	63
Smith Cook No. 3 (1586)	308
Smith & Thompson (1288)	300
Smithman (655)	84
Smythe (48)	. 80
Snooks Nos. —, — (1628, 1629)	310
Snow (W.) farm	294, 303
Snyder No. 1 (42)	. 27
Sold and Dallon (Nos. —, — (1551, 1552)	307
South Side, Black farm (1234 to 1238)	298
South West township, Warren county	88, 184
South Oil City RR. level	312
South Well, lot No. 19, Minor farm (906)	
Sparta township, Crawford county	. 69
Spartansburg, Clarion county	
Spartansburg (326)	. 74
Spear (390)	
Spellacy (Mark)	
Spence (1169); (1280)	
Spider (1310)	301
Sproul (616) lease 207	
St. Joe, Butler county wells	
St. Lawrence (1625)	
St. Petersburg, Clarion county; cluster of wells	
Starr (J.) farm	301
Steele farm; Steele No. 1 (32)	. 303;22
Sterling (110)	
Stevenson (Rob.) farm	47, 48, 76
Stevenson No. 1 leases 36, 51, 37 (86, 87, 92)	
Stewart (Lyman); tract, Cashup	40;80
Stewart's Run, Venango county 7	
Stewart (790)	122
Stewart (A.) farm; No. 1 (1578)	
Stock (343)	74
Stoddard & Frank Nos. 2, 3, 4 (476, 475, 474)	79
Stoneboro' level	-
Stonehouse farm and wells (1239 to 1241).	299
Story farm, Oil Creek	
Story Centre No. 1 (106)	54
Stoughton No. 2 (1172); (1444)	
Stoughton & Wiser well	268
Strickland & Fuller (1313)	301
Stuart (100)	51
Sugar Creek township, Venango county	
Sugar Creek, Jennings & Ralston Nos. 2,3 (1044'5)	200
Sulphur, Cherry Run flat. (693)	95

		PAGE
Sulphur (694); Rynd farm (696)		. 8ŧ
Sulphur Water Well (1210)		. 298
Summit township, Butler county		. 268
Surprise No. 1 (1048)	• • • • • • • • • • •	202
Sutter (424)		. 77
Sutton No. 4 (1199)	<b></b> .	284
Sutton (P.) farm		284,301
Sutton (J.) farm		302
Sutton farm; (1315); (1344)	310	; 301, 302
Sunbury level		327
Swan (1051)		203
Swan (Edwin) & Belch No. 1 (2)	<i></i>	9
Swamp Angel, Nos. 3,4 (93,94)		49
Sweepstakes (1147)		248
Sweetzer No. 2 (1618)		309
Swift farm well (1197)		282
S. P. & Co., Nos. 3, 6, 14, 65 (392 to 395)	• • • • • • • • • • • • •	76
Tabor and Thompson green oil (646)		84
Tack and Morehead Nos. 1,2 (1303, 1304)		300
Taft (C. E)		203
Tallman farm No. 2 (69)		40
Tallman farm (382); No. 112 (388)		75,76
Tanner (1504)		305
Tarentum Station level		329
Tarr farm		
Tarr, Story and Cherry Run Oil Co. No. 2 (921)		154
Taylor (H. L.) & Co.; farm	250, 284,	294; 310
Taylor, see Satterfield		299
Templeton (1301)		300
Terry (34)		23
Thomas Brothers (451)		79
Thoms Run (1210)		298
Thompson (Robert) farm		
Thompson (Robert) gas well (1175); (1529)		266;306
Thompson (T. I.)	. <i></i>	51
Thompson, see Smith		300
Thompson (1408); (1600)		303; 309
Thompson and Mechlen (1452)		304
Thornberg No. 2 (1002)		182
Thorn Creek well (1180)		
Tidioute 8,70,81,8	84, 88, 114, 118	3, 120, 177
Tidioute No. 1, (16,) Pleasantville		
Tidioute Bridge		
Tidioute and Warren tract		
Tidioute and Warren Oil Co., lease No. 58; well 1 (764).		
Tidioute and Warren Oil Co., Nos. 2 to 5 (765 to 768)		
Tionesta, Forest county; depot; road	8, 63, 79	; 81; 180
Tip Top farm, Venango county		
Titusville, Crawford county 66		
Titusville levels		
Titusville, Plumer road		. 42

	PAGE.
Titusville and Pithole plank road	
Titusville and Pithole road levels	
Titusville wells	
Tom Collins see Collins (1456)	
Tomlinson	
Tomkins (N. J.)	. 43
Town Creek	
Triangle City (1592)	. 309
Triumph, Warren county; Hill 70, 83, 114, 116, 117, 177	; 180, 183
Triumph Oil Co. tract	, 116, 180
Triumph Oil Co. No. 175 (140)	. 70
Nos. 23, 101, 146, 148, 149, 152, 224, 237 (769 to 776)	116
Triumph lease 126 (995)	. 180
Triumph lease 224 (996); lease 148 (997)	181
Triumph No. 49 D. (998	
Triumph road	
Troutman (S.) farm	301,302
Tryonville Junction level	
Turkey city, Clarion county; wells	227:308
Turkey run	307
Turkey see Collins (619)	83
Turner & Co. (1621)	309
Tuttle (556)	82
Two-Mile run, Venango county	202
Tycoon (1229)	298
Tyrrel (Ben.) farm	223
Tyrrel farm (479)	80
Tyrrel (J. N.) farm.	- •
Tyrrel run, Venango county	150
Tyrrell Hill level	362
Theorem / TY II \	
Uncaper (W. H.)	281
Uncle Hiram (1420)	304
Union (108,) No. 11 (934)	
Union City	314
Union City levels	
Union City P. & E. Depot level	320
Union Depot, Pittsburg level	
Union Co. (905)	86
Union Pet. Co. of N. Y. farm.	59, 86
Union Pet. Co. No. 13 (118) No. 6, (119)	59
Union Pipe Line Co.	313
Union Pipe Line Co. datum	296
Union & Titusville RR. levels	370,348
United States No. 38 (301)	74
United States see Reed	711
United States Pet. Co. well No. 27 (13)	14
United States well see Frazer	885
Upper Cherry run	160
Urbana level	327
Vandergrift J. J. (125)	60;65
Vanaman farm	221

	PAGE.
Van Scovil (1607)	309
Venango City, Venango county	4
Venango county wells	1, 8, 87
Vesta Pet. Co. farm	75
Vicker & Russell (75)	43
Vide see Divide well (1212)	298
Vine Hill 1870 (969)	171
Walnut Bend	191
Walter Scott Pet. Co. tract	35, 85
Ware farm	82
Ware tract	103, 104
Warner farm	304
Warner (1447)	304
Warner see Painter (1636)	310
Warren levels	315
Warren and Tionesta road	180
Washington (1050)	203
Watkins farm	12,13
Watson () (922)	171, 188
Watson flats, Titusville, Crawford county	68,77
Watson well (1095) M'Kee (C) F	220
Watson see Raydure	180
Weed (Ike) farm, Church run, (135)	3;68,79
Weggefarth City	85
Weiser (1474,) (1525)	305, 306
Weller farm, No. 1 (1565)	308
Wesley, see Rire	649
West Hickory, Nos. 2 to 6 (938 to 942)	159, 160
West Hickory Nos. 3, 4, 7, 10 (923 to 926)	155
West Hickory Nos. 17, 19, 37, 38 (927, 928, 936, 937)	156, 158
West Hickory Cr	157, 159
West Hickory Cr. Wells,	154
Westmoreland Co	277,280
West Penn kR	277
West Penn RR. levels, tables	341
West Penn Junction level	229,330
Welter (1598) (1608)	309
Well No. 7 (892)	142
Whale (368)	75
Warry (J. A.)	45,46
Wheeler (Mr.) (1188)	275
Wheelock, No. 1 (554)	82
Wheelock, abandoned (555)	82
White (J.) farm	157
White Rock Station level	329
Whitman (G.) see Reed (699).	
Wild Cat No. 1 (1254)	299
Wild Cat Hollow, Clarion county	237
Willard No. 1 (760) (421)	113;76
Williams (W.) & Simpkins	26
Williams Severance & Co.'s tract	67

·	PAGE.
Williams, Say & Co	16, 17
Williamsport Junction level	327
Willoughby (715, 716)	86
Willoughby	191
Wilson (W. A.) farm (345)	300, 301
Winfield township, Butler county	269
Wing (284)	73
Winslow Pet. Co	25
Wise (1554)	307
Wiser (Mr.) sec Stoughton	268
Witherup farm see Baum	216
Wood (S.) farm No. 1, lease No. 2 (82)	45.
Wood (Wm.) No. 3 (415,) No. 13 (472) 76;	79, 171
Woodford (282)	73
Wood & Wright tract	84
Wood & Ripley No. 1 (1361) No. 2 (1362)	302 .
Wood & Ripley No. 2 (1145)	247
Worthington (J.)	258 -
Wray (D. A.) (1032)	190
Wrigglesworth tract	79 ·
Wright Allen No. 17 (718)	86
Wright see Wood	84
Wyatt Mr. (1423,1424) 2	63;304
Wynkoop & Co. (1613)	309,
Yankee (1198)	283
Yankee Ridge road	84
Yellow Creek well (1196)	282
Yerka No. 1 (137)	68
Young No. 8 (1102)	224
Young farm	150
Young America (352)	75
Zurver (And.) 16,17,	74, 280

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